GENERATION AND PRESERVATION OF CONTINENTAL CRUST IN COLLISIONAL OROGENIC SYSTEMS

Christopher J. Spencer

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Generation and Preservation of Continental Crust in Collisional Orogenic Systems

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Declarations

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I, Christopher J Spencer hereby certify that this thesis, which is approximately 23000 words in length (excluding the bibliography), has been written by me, that it is the record of work carried out by me and that it has not been submitted in any previous application for a higher degree.

I was admitted as a research student in August 2011 and as a candidate for the degree of Doctor of Philosophy in August 2012; the higher study for which this is a record was carried out in the University of St Andrews between 2011 and 2013.

I, Christopher J Spencer, received assistance in the revision of this thesis in respect of which was provided by Professor Peter A Cawood, Professor Chris J Hawkesworth, Doctor Anthony R Prave, and Doctor Tim Raub.

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Abstract

The continental crust is the archive of Earth history. Much of what we know about the development of Earth is learned from the continental crust, and it is within the crust that many natural resources are found. Hence, understanding its formation and evolution is a key aspect to a deeper knowledge of the Earth system.

This thesis is a study of the processes that have formed and shaped the distribution of continental crust, with specific focus on crustal development associated with the Rodinian supercontinent and the Grenville Orogeny spanning ca. 1200 to 900 Ma. Specifically it addresses an aspect of the incompleteness of the record of continental crust formation. The preserved continental crust is punctuated with periods of lesser and greater frequency of geologic features, e.g., the temporal distribution of the ages of mineral deposits, juvenile granitoids, eclogites, granulites, and the U-Pb crystallization ages of zircons now preserved in modern and ancient sediments (see Gastil, 1960; Barley and Groves, 1992; Condie, 1998; Campbell and Allen, 2008; Brown, 2007; Bradley, 2011). In addition, interpretive features in the geologic record also have an apparent episodic distribution such as passive margins (Bradley, 2011) and supercontinents (Condie, 1998). The episodic nature of these geologic phenomena implies either an episodic formation or preferential preservation of continental crust. These two end member models have been explained through a number of geologic processes such as eruption of superplumes, global disruption of thermal structure of the mantle, assembly of supercontinents, collisional orogenesis. Through the chapters outlined below, this thesis explores the connection of these episodic geologic events with key isotopic signals, principally U-Pb, Hf, and O isotopes in zircon supplemented by sedimentology, structural geology, and igneous geochemistry. It comprises a series of chapters developed around manuscripts prepared for publication.

Outline

Chapter 1, — Not all supercontinents are created equal: Gondwana - Rodinia case study — discusses the connection of Sr isotopes in seawater with the geodynamic configuration of supercontinent assembly, with specific focus on Gondwana and Rodinia. It is argued that the geodynamic configuration of continental collision (i.e. subduction polarity, age of colliding margins) influences significantly the resulting isotopic signature imparted on the oceans. A refined and shortened version of this chapter is published in Geology: v. 41, p. 795-798.

Chapter 2 — Proterozoic Onset of Crustal Reworking and Collisional Tectonics: Reappraisal of the Zircon Oxygen Isotope Record — is a study that uses a global compilation of the values of oxygen isotopes in zircon spanning 4.4 billion years. The isotopic profile is used to infer the growth of continental crust and the onset of collisional orogenesis through time. These data suggest that the Archean/Proterozoic boundary marked a significant shift in the oxygen isotopic composition of the continental crust, which is related to the onset of collisional tectonics.

Chapter 3 — Detrital Zircon Geochronology of the Grenville/Llano Foreland and Basal Sauk Sequence in west Texas — focuses on the sedimentation associated with the Grenville Orogeny and the subsequent rifting of Laurentia. U-Pb ages of detrital zircons are used to elucidate the sedimentological and geodynamic evolution of south-central North America during the assembly and break-up of Rodinia. This chapter has been revised into manuscript form that has been submitted to the Geological Society of America Bulletin for review.

Chapter 4 — Intermontane basins and bimodal volcanism at the onset of the Sveconorwegian Orogeny, southern Norway ¬— details a study of the Telemark region of southern Norway that records the convergence phase of tectonism that led up to the assembly of Rodinia. U-Pb zircon geochronology of the late Mesoproterozoic Bandak succession and the geochemistry of intercalated bimodal volcanic rocks are used to test the idea that the development of sedimentary basins and volcanic rocks were emplaced inboard of a convergent margin and represent extension within a thickened orogenic plateau.

Chapter 5 — Generation and Preservation of Continental Crust through the Grenville Orogenic Cycle — concentrates on the pre-, syn-, and post-collision sedimentation in Labrador and Scotland associated with the Grenville Orogeny. This final chapter addresses the issue of enhanced crustal generation versus preferential preservation. Using U-Pb, Hf, and O isotopes in zircon I interrogate the isotopic infrastructure of the dominant U-Pb age peak centered on the apex of the Grenville Orogeny. Using sedimentary successions during various stages of the orogenic cycle, the evolution of detrital zircon age spectra is discussed as the orogeny transitions through the destructive (subduction) to collision phases.

Chapter 1 Not all supercontinents are created equal: Gondwana - Rodinia case study

ABSTRACT

The geologic record associated with the formation of the supercontinents Rodinia and Gondwana have markedly different seawater Sr and zircon Hf isotopic signatures. Rodinia-related (Grenville/Sveconorwegian/Sunsas) orogens display significantly less enriched crustal signatures than Gondwana-related (Pan-African) orogens. Seawater Sr isotope ratios also exhibit a more pronounced crustal signal during the span of the Gondwana supercontinent than at the time of Rodinia. Such isotopic differences are attributed to the age and nature of the continental margins involved in the collisional assembly, and specifically to the depleted mantle model ages, and hence the isotope ratios of the material weathered into the oceans. In our preferred model the isotopic signatures of Rodinia-suturing orogens reflect the closure of ocean basins with dual subduction zones verging in opposite directions, analogous to the modern Pacific basin. This would have resulted in the juxtaposition of juvenile continental and island arc terrains on both margins of the colliding plates, thus further reworking juvenile crust. Conversely, the assembly of Gondwana was accomplished primarily via a number of single-sided subduction zones that involved greater reworking of ancient cratonic lithologies within the collisional sutures. The proposed geodynamic models of the assembly of Rodinia and Gondwana provide a connection between the geodynamic configuration of supercontinent assembly and its resulting isotopic signature.

INTRODUCTION

Secular trends of geologic features such as U-Pb detrital zircon ages, abundance of passive margins, and Sr isotopes in seawater vary with the cycle of assembly and dispersal of supercontinents (Fig. 1.1; Hawkesworth et al., 2010; Bradley, 2011, Cawood et a., 2013). The running average of epsilon Hf (εHf) in zircon has similar secular trends with peaks and troughs of positive and negative values (Fig. 1.1; e.g. Belousova et al., 2010; Roberts et al., 2012; Cawood et al., 2013). Specifically, the running average of εHf analyses from a worldwide database of ~7000 U-Pb and Hf analyses of zircons from Phanerozoic sediments (from Dhuime et al., 2012) show the most negative trough of -12 at 550 Ma (Fig. 1.1) corresponding to the timing of the Gondwana-forming orogenies. These strongly negative values associated with Gondwana assembly contrast with the timing of the Rodinia-forming orogenies (1250 – 980 Ma) when the εHf running mean remains near the chondritic uniform reservoir (Fig. 1.1).

I argue that the Sr and Hf isotopic characteristics of material formed during the assembly of supercontinents (specifically Rodinia and Gondwana), and consequently the Sr isotope ratios of seawater, are a consequence of age and isotope composition of the margins associated with the assembly of each supercontinent. These isotopic features are then related to differing models of supercontinent assembly.

RODINIA AND GONDWANA CONTINENTAL MARGINS

The ages of preserved continental margins involved in the assembly of Rodinia and Gondwana differ significantly in age and isotopic character. Relatively young, isotopically juvenile rock units dominate the continental margins incorporated into

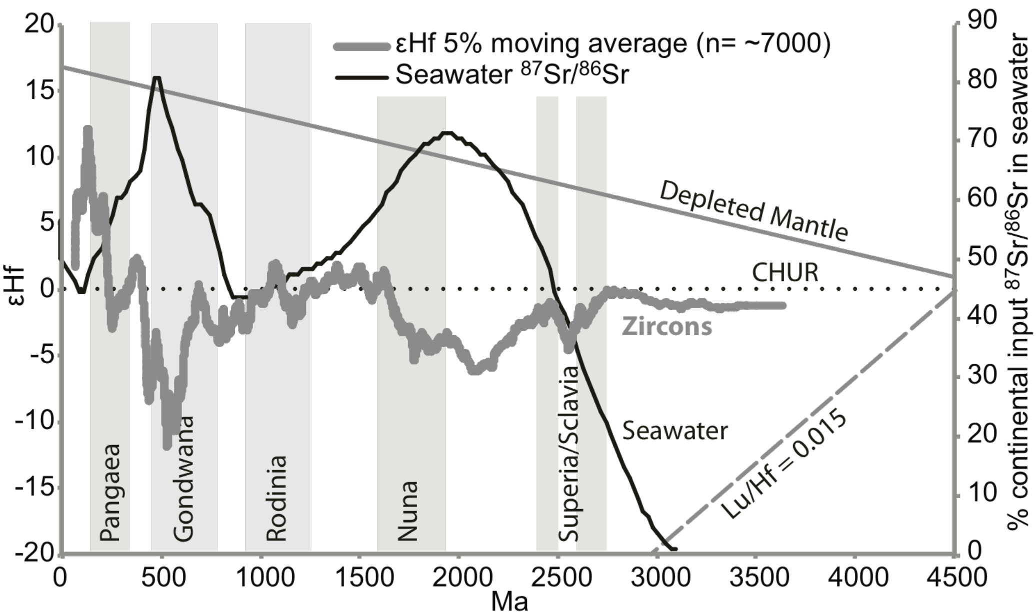

Figure 1.1: Normalized seawater $^{87}Sr/^{86}Sr$ curve (Shields, 2007) is plotted with 5% running average of initial zircon εHf (i.e. 5% of the total n in the database is used for the period of the running average) from a global database of modern and recent river sediments (see Dhuime et al., 2012 for references). Outlined are the time periods of the Grenville and Pan-African related orogenic events (Bradley, 2011). CHUR: Chondrite uniform reservoir.

Rodinia during its assembly, whereas Gondwanan margins are significantly older and more evolved. Prior to the Rodinia-forming orogenies, the early-Mesoproterozoic crust of the 1.5-1.3 Ga Granite-Rhyolite (USA), 1.51-1.45 Ga Pinwarian (Canada), 1.56-1.3 Ga Rondonian (Brazil), 1.52-1.48 Ga Idefjorden, Bamble, and Telemark (Norway) provinces (Whitmeyer and Karlstrom, 2007; Bettencourt et al., 2010; Bingen et al. 2008) dominated the colliding margins of Laurentia, Amazonia, and Baltica. The rocks on these margins were less than 400 million years old at the time of collisional assembly. Other end-Mesoproterozoic orogenic events are also found in Australia, Antarctica, India, and North China; however, the assembly of these blocks resulted in geographically restricted episodes of magmatism (e.g. Kröner et al., 2003; Collins and Pisarevsky, 2005; Cawood and Krosch, 2008; Zhao and Cawood, 2012) (Fig. 1.2b). In contrast, Archean and Paleoproterozoic crust dominates the continental margins associated with the assembly of Gondwana. The Damara/Zambezi belt juxtaposes the northern Paleoproterozoic/Archean margins of the Kalahari Craton and Rayner/Rauer Complex with the southern Archean margins of the Congo and Dharwar Cratons (Gray et al., 2008 and references therein; de Waele et al., 2008). Likewise the Dahomeyide, Pinjarra, and Brasiliano collisional orogens share similar relationships (e.g. Cawood, 2005; Rapela et al., 2011). These margins were significantly older at the onset of

Gondwana amalgamation than those involved in the formation of Rodinia.

Using geologic maps and ArcGIS, the present day length of the margins were measured for the Rodinia- and Gondwana-forming orogens and the adjacent geologic provinces. This indicates that 63% of the Grenville/Sunsas/Sveconorwegian orogenies were juxtaposed with 1.3-1.5 Ga crust with the remaining comprising ~1.7 to 1.9 Ga crust (e.g. Labradorian and Yavapai provinces) (Fig. 1.2b). This is in stark contrast to the Gondwana-forming (Pan-African) orogenies in which 58% of the margins involved in this orogeny are adjacent to Archean cratons with the remaining third comprised of Neo- and Mesoproterozoic crust, and minor Paleoproterozoic crust (Fig. 1.2a).

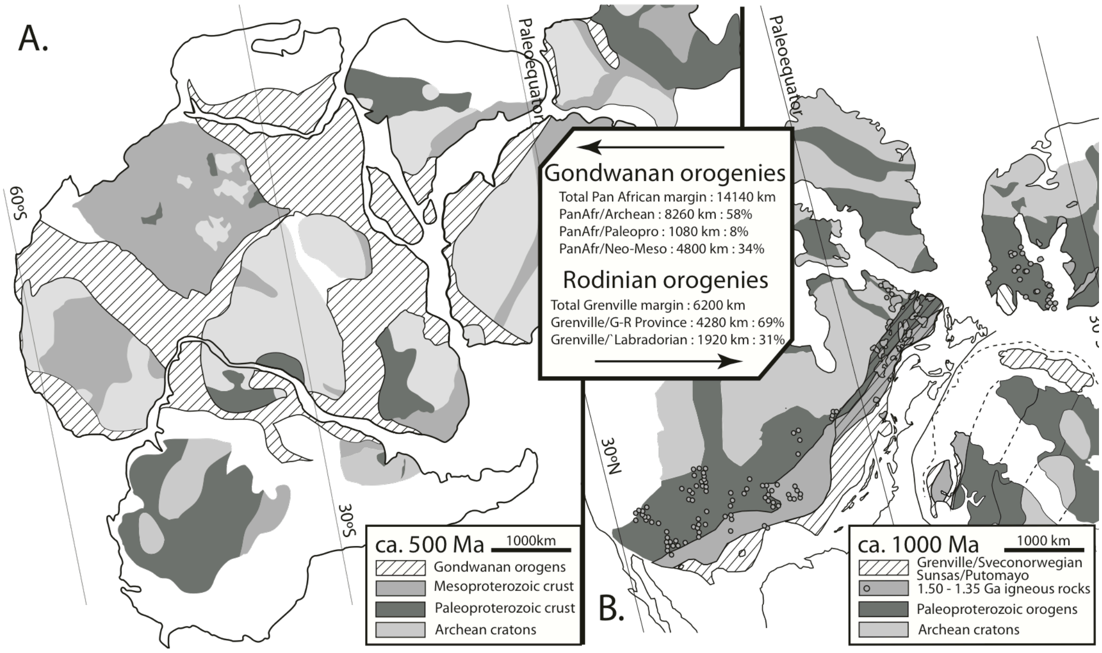

Figure 1.2: a) Map of Gondwana (~500 Ma), showing the extent of the Gondwana-forming orogenies and distribution of Precambrian provinces (modified from Li et al., 2008; Cawood and Buchan, 2007; Torsvik and Cocks, 2009 and references therein). b) Map of Laurentia (~1.3 Ga), with Paleozoic and younger geology omitted, showing the extent of Rodinia-forming orogenies (modified from Tohver et al., 2002; Cawood et al., 2007; Jacobs et al., 2008). Lower panels are relative probability of zircon Hf depleted mantle model ages of the c) Grenville and d) Pan-African orogeny and percentage of pre- and post-1.0 Ga analyses (the shaded probability density plot). TDM: Depleted mantle model age. Superimposed on the TDM distributions (the spaced histogram) is the percentage and age of the continental margins involved in the assembly of Rodinia and Gondwana. The ages of the margins are a generalized average not representing the exact span of time. e) Close-up of the left side of the TDM distributions. Age of the margins and TDM ages are normalized to the end of the respective collisional orogenies.

Assuming the present exposed distribution of rock units is representative of the relations at the time of syn-collisional erosion, The relative proportions of juvenile versus evolved crust associated with orogenesis can then be compared isotopically during the assembly of Rodinia and Gondwana. Using the compiled U-Pb and Hf analyses from Phanerozoic sediments presented by Dhuime et al. (2012), The initial Hf isotope ratios in zircon and Hf depleted mantle model ages for the timespan associated are compared with the assemblies of Gondwana and Rodinia in the Pan-African and Grenville orogenies respectively.

Within the database, zircons with U-Pb crystallization ages of 520-650 Ma were selected to represent the isotope compositions of the rocks associated with the formation of Gondwana and those of 980-1250 Ma to represent the assembly of Rodinia (Cawood and Buchan, 2007; Bradley, 2011). Depleted mantle model ages were then normalized to ages of 900 and 480 Ma, which broadly represents the end of the Rodinia- and Gondwana-forming orogenies (i.e. 480 and 900 Ma were subtracted from the present day depleted mantle model ages of analyses within the respective orogenies). Integration of probability density plots highlights that Rodinia-forming orogenies incorporate significantly more material with relatively young model ages, whereas Gondwana-forming orogens have a greater proportion of relative old model ages (Fig. 1.3).

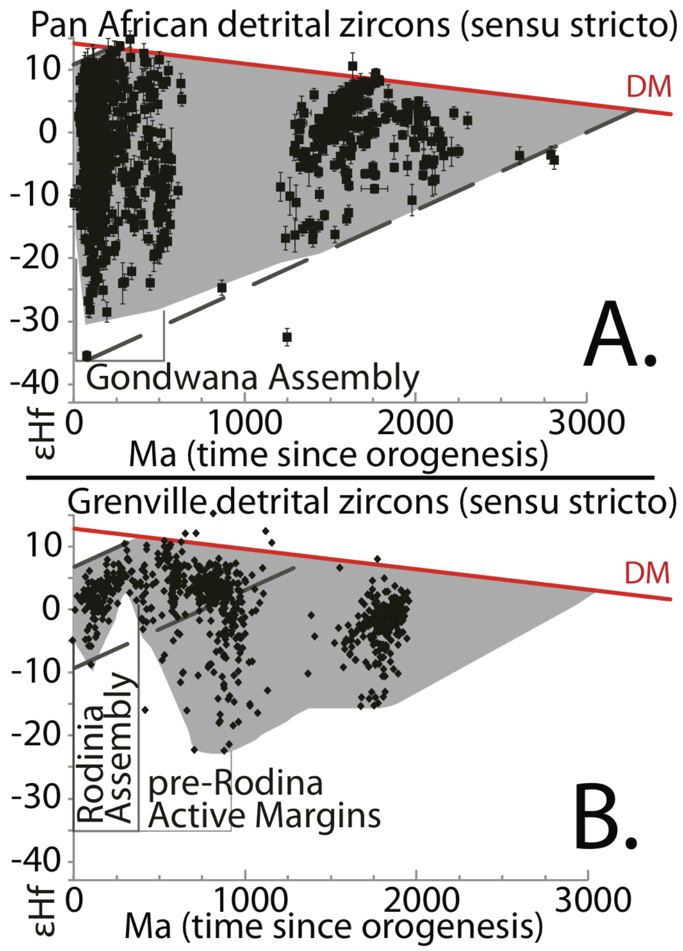

Figure 1.3: Compiled zircon Hf/U-Pb data from detrital zircons derived from the Pan African (a) and Grenville (b) orogenies (sensu stricto). Zircon ages are subtracted from the time since orogenesis occurred (i.e. 900 and 480 Ma were subtracted from zircons derived from the Grenville and Pan African orogenies respectively).

The average depleted mantle model Hf ages from the Gondwana- and Rodinia-forming orogenies were therefore used to calculate the bulk Sr isotopic composition of the eroded margins at 900 Ma for Rodinia and 480 Ma for Gondwana assuming an average upper crustal Rb/Sr ratio of 0.256 (Rudnick and Gao, 2003). Strikingly the Sr isotope ratio of seawater is ~0.7053 at 900 Ma and ~0.7082 at 480 Ma (from Shields, 2007), and the calculated average Sr isotope ratios of the active margins at those times were 0.709 and 0.711 respectively. Thus the Sr isotope ratio of seawater increased by 0.0029 between 900 Ma and 480 Ma, and the run-off from the active margins increased by 0.0019. The differences in the Sr isotope signals for the Rodinia- and Gondwana-forming orogenies can therefore be largely attributed to the differences in the ages of the pre-existing rocks reworked along those margins, assuming Sr abundances in the fluxes from the mantle and crustal end-members are similar to those at the present day. Because continental collision maximize subaerial exposure of continental crust and erosion is focused along the colliding margins the discrepancy may in due in part to differences in the continental run-off from areas not involved in these two orogenic systems.

The different zircon Hf and seawater Sr isotope signatures of the Grenville and Pan-African orogenic systems is readily explained by contrasting geodynamic scenarios. The assembly of Rodinia (ca. 1250-1140 Ma) was primarily accomplished through dual, opposing subduction zones beneath the Kalahari/Amazonia on one side (Ibanez-Mejia et al., 2011 and references therein; Jacobs et al., 2008) and Laurentia/Baltica on the other (Rivers and Corrigan, 2000 and references therein; Bingen et al., 2008) (Fig. 1.4). This dual-sided subduction system juxtaposed juvenile continental arcs on the colliding continental margins. Several previously accreted island arc terranes are also found throughout the Grenville and related orogens (Rivers and Corrigan, 2000; Bingen et al., 2008) adding to the juvenile component of the continental margins. Compiled zircon Hf isotopes from Grenville-derived sedimentary rocks in Laurentia and Baltica (Fig. 1.3) show an increasingly juvenile signature with time just prior to the collisional assembly of Amazonia, Laurentia, and Baltica (i.e. the ~1.5 to 1.3 Ga Granite-Rhyolite, Pinwarian, Labradorian, and Gothian Provinces) (Fig. 1.4) consistent with a dual-opposing subduction model, and analogous to the modern Pacific (Fig. 1.4; see also Collins et al., 2011). Following the initial stages of collision (~1.25 Ga), zircon Hf isotopes become increasingly isotopically enriched with a greater degree of crustal reworking (Fig. 1.3).

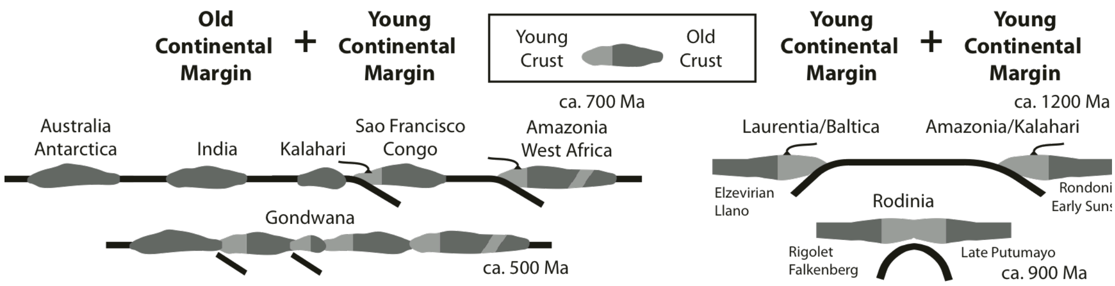

Figure 1.4: Contrasting supercontinent geodynamic models of Rodinia and Gondwana (modified from the modern circum-Pacific and Eurasian orogenic models of Collins et al., 2011).

The assembly of Gondwana was primarily accomplished through collision between the Amazonian—West African, Sao Francisco—Congo, Kalahari, India, and Australia—Antarctica cratons between 650 and 520 Ma (Collins and Pisarevsky, 2005; Cawood and Buchan, 2007) (Fig. 1.2a). In contrast to the assembly of Rodinia, the isotopic data associated with the assembly of Gondwana require the incorporation of greater proportions of older crustal material (Avigad et al., 2011). It is inferred that the assembly of Gondwana was dominated by single-sided subduction, which allowed for the juxtaposition of juvenile continental arcs with passive margins (see also Meert, 2003; Foster et al., 2005; Gray et al., 2008). Although, the Pan African and other orogens associated with the assembly of Gondwana have a significant juvenile component in some areas (e.g. accreted island arcs and ophiolites of the Arabian-Nubian Shield) (Stern, 2002; Johnson et al., 2011), Hf isotopic signatures indicate that an evolved continental signature dominated the orogenic system (Fig. 1.4). This is similar to the long-lived unidirectional subduction system(s) of Eurasia (Fig. 1.3; see also Collins et al., 2011).

The observed isotopic patterns associated with the assembly of Gondwana and Rodinia reflect the ages of the contemporaneous continental margins and different styles of subduction and subsequent collision. These patterns can aid in the discrimination of various geodynamic styles of continental collision (e.g. single versus dual-sided assembly; Collins et al., 2011). Further work is needed along the margins of the other ancient supercontinents to assess the geodynamic configuration of supercontinent assembly and associated isotopic characteristics.

ACKNOWLEDGEMENTS

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Chapter 2 Proterozoic Onset of Crustal Reworking and Collisional Tectonics: Reappraisal of the Zircon Oxygen Isotope Record

ABSTRACT

Oxygen isotopes in zircon indicate contributions from (supra) crustal and mantle sources during the petrogenesis of igneous rocks through time. A global U-Pb and $\partial^{18}O$ zircon database reveals changes in the magmatic record related to changes in the degree of crustal reworking through time. The $\partial^{18}O$ composition of bulk sediment remains relatively constant through geologic time, in contrast to the significant post-Archean scatter to high $\partial^{18}O$ values in magmatic zircons. The proportion of zircons with crustal and mantle signatures increases from the end of the Archean. In detail, the degree of crustal reworking increases at the times of supercontinent assembly. This is attributed to the onset of significant crustal reworking of high $\partial^{18}O$ sediment in response to crustal thickening associated with the onset of collisional tectonics.

INTRODUCTION

Zircon tends to retain its isotopic and geochemical signatures due to mineral stability at high temperatures, chemical inertness, and durability. Diffusion rates of oxygen isotopes in zircon have also been shown to be relatively slow (Bowman et al., 2011). The near ubiquitous presence of zircon in felsic and intermediate igneous rocks and its refractory nature in sedimentary rocks makes zircon a key mineral to understand the evolution of the continental crust (Cawood et al., 2013). At the time of crystallisation, oxygen isotopes in zircon reflect the $\partial^{18}O$ values of the host magma and hence the relative contributions of material from the mantle and the upper continental crust. Zircons from with a mantle signature have $\partial^{18}O$ values that range from 4.7 to 5.9 ‰ (Valley et al., 1998). For zircons in which radiation damage and thermal dilation that might disrupt the U-Pb and O isotopic systems (Cherniak and Watson, 2001; Booth et al., 2005) can be discounted, any significant increase from the range of mantle values is interpreted as a direct consequence of melting and reworking of supracrustal material

(Valley et al., 2005). Fractionation of oxygen isotopes in subaerially exposed crustal materials takes place during low-temperature weathering and alteration processes (e.g. Valley, 2003). Melts that incorporate such sediments therefore have elevated zircon $\partial^{18}O$ values (Valley et al., 1994; Roberts et al., 2013).

A global database of oxygen isotope analyses in zircon is compiled (Fig. 2.1; DR1) to investigate changes in the degree of crustal reworking in continental magmas through time. Previous studies coupling oxygen and U-Pb isotopes in zircon indicate that Earth's Archean crust was dominated by mantle-like oxygen isotopic values (Valley et al., 2005; Dhuime et al., 2012), but it has not been clear whether this restricted range indicates minimal crustal reworking in the Archean, or a restricted range of $\partial^{18}O$ (WR) in Archean sedimentary rocks (Valley et al., 2005). Post-Archean zircons have a greater range in $\partial^{18}O$, suggesting an increased contribution from upper crustal melts and/or an increasingly evolved supracrustal reservoir available for subsequent reworking. Previous treatments by Valley et al., (2005) suggest that the envelope of maximum $\partial^{18}O$ (zircon) values in magmatic zircons increases from the earliest Proterozoic to the present.

The extent to which the $\partial^{18}O$ values of sedimentary rocks have changed through time is re-evaluated and compared the $\partial^{18}O$ values of the zircon and sedimentary records. The zircon $\partial^{18}O$ database presented in Data Repository 1 highlights the increase in elevated $\partial^{18}O$ material above an essentially constant Archean-Hadean background at ~2.5-2.15 Ga. This is attributed to the incorporation of subaerially fractionated supracrustal material during the earliest Proterozoic that is linked to the onset of significant crustal

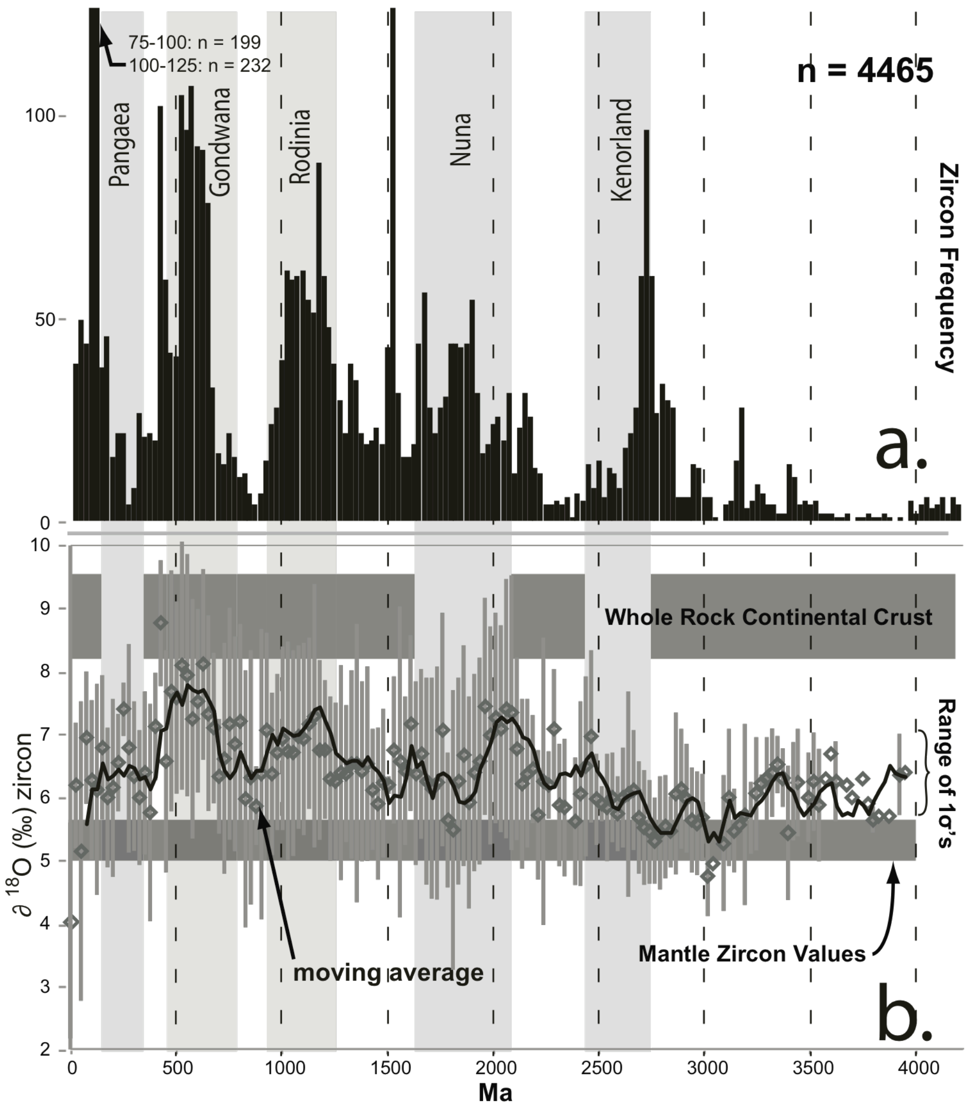

Figure 2.1: a) Histogram of compiled U-Pb ages with accompanying $\partial^{18}O$ values overlain on age ranges of supercontinents (see Campbell and Allen, 2008; Bradley et al., 2011; Pisarevsky et al., 2013); b) Distilled compilation of ~4500 $\partial^{18}O$ analyses of zircon versus U-Pb age plotted as means and standard deviations of 25 My bins. Also plotted are the range of average mantle and continental values (Valley et al., 1998; Simon and Lécuyer, 2005) and a moving average of $\partial^{18}O$ bins.

thickening and continental collisions (e.g. Ernst, 2009; Dhuime et al., 2012; Keller and Schoene, 2012).

METHODS

Our database combines ~4400 $\partial^{18}O$ analyses of detrital and igneous zircon grains (Figs.1a and 1b). In situ oxygen analysis of zircon (i.e. those analysed using an ion-microprobe) have U-Pb ages that are < 10 % discordant. Discordant zircon ages, as well as zircon data reported from metamorphic grains or overgrowths (which tend to be extremely fractionated; e.g. Bowman et al., 2011), were excluded. U-Pb age distribution of data compiled in this study also display statistically significant similarity (see Table 1 for Kolmogorov-Smirnov and Cramér-von Mises tests results) both to the modern river zircon database (Campbell and Allen, 2008) and the Virginia Tech database of ~200,000 zircons (Voice et al., 2011). This affirms that our database broadly represents the exposed crustal record, although there has been much discussion over the extent to which the crustal record itself may be biased by tectonic processes (Hawkesworth et al., 2010; Condie et al., 2011; Cawood et al., 2013).

$\partial^{18}O$ values in zircon within this updated database differs from that used previously by Valley et al. (2005) in that it incorporates nearly three times the number of analyses, and it demonstrates: (i) the range of Archean $\partial^{18}O$ values is broader, +2.4 to +8.8 ‰ (average: 5.7 ± 0.9 ‰ 1 σ) versus +5.0 to +7.5 ‰ (average: 5.8 ± 0.7 ‰ 1 σ); (ii) the distribution of Proterozoic $\partial^{18}O$ values is unimodal with a low skewness (1.0) and similar to Phanerozoic values; and (iii) 3 % of the analyses lie above the composition/time envelope of $\partial^{18}O$ values previously proposed (Valley et al., 2005). The majority of zircon oxygen analyses in the Valley et al. (2005) study were done

Table 2.1: Results of Kolmogorov-Smirnov (KS) and Cramér-von Mises (CvM) tests on compiled U-Pb datasets. Statistical tests were performed using the ks2test and cm2test functions in Matlab.

CvM	Campbell and Allen, 2008	Voice et al., 2011	Valley et al., 2005	this study
Campbell and Allen, 2008		32.7462	44.1056	**7.4072**
Voice et al., 2011	32.7462		59.2184	**24.234**
Valley et al., 2005	44.1056	59.2184		**22.0593**
this study	**7.4072**	**24.234**	**22.0593**	

KS	Campbell and Allen, 2008	Voice et al., 2011	Valley et al., 2005	this study
Campbell and Allen, 2008		0.1216	0.4235	**0.1206**
Voice et al., 2011	0.1216		0.398	**0.1453**
Valley et al., 2005	0.4235	0.398		**0.3301**
this study	**0.1206**	**0.1453**	**0.3301**	

using laser fluorination therefore some of these differences might be due to the large number of data analysed using secondary ion mass spectrometry which is less precise than laser fluorination. The updated database is parsed and analysed using a bin-size optimisation procedure (Shimazaki and Shinomoto, 2007) to avoid pitfalls associated with bin widths that are unjustifiably small relative to analytical errors (as in Voice et al., 2011), or so large as to limit interpretive resolution (as in Dhuime et al., 2012).

Our analysis uses the natural subdivisions of the frequency of zircon ages within the compiled dataset (Fig. 2.1a) as the basis for evaluating temporal isotopic shifts and to divide the $\partial^{18}O$ dataset into the following time intervals: pre-3100 Ma, 3100-2450 Ma, 2450-2000 Ma, 2000-1600 Ma, 1600-1300 Ma, 1300-900 Ma, and 900-400 Ma (Fig. 2.2a). It is noted that values of $\partial^{18}O$ from zircons with ages younger than 400 Ma are lower than those immediately preceding them (Fig. 2.1b). This is likely due to the disproportionate sampling of atypical compositions and/or petro-tectonic associations of the analysed samples, e.g. the extremely low $\partial^{18}O$ magmas from the Isle of Skye

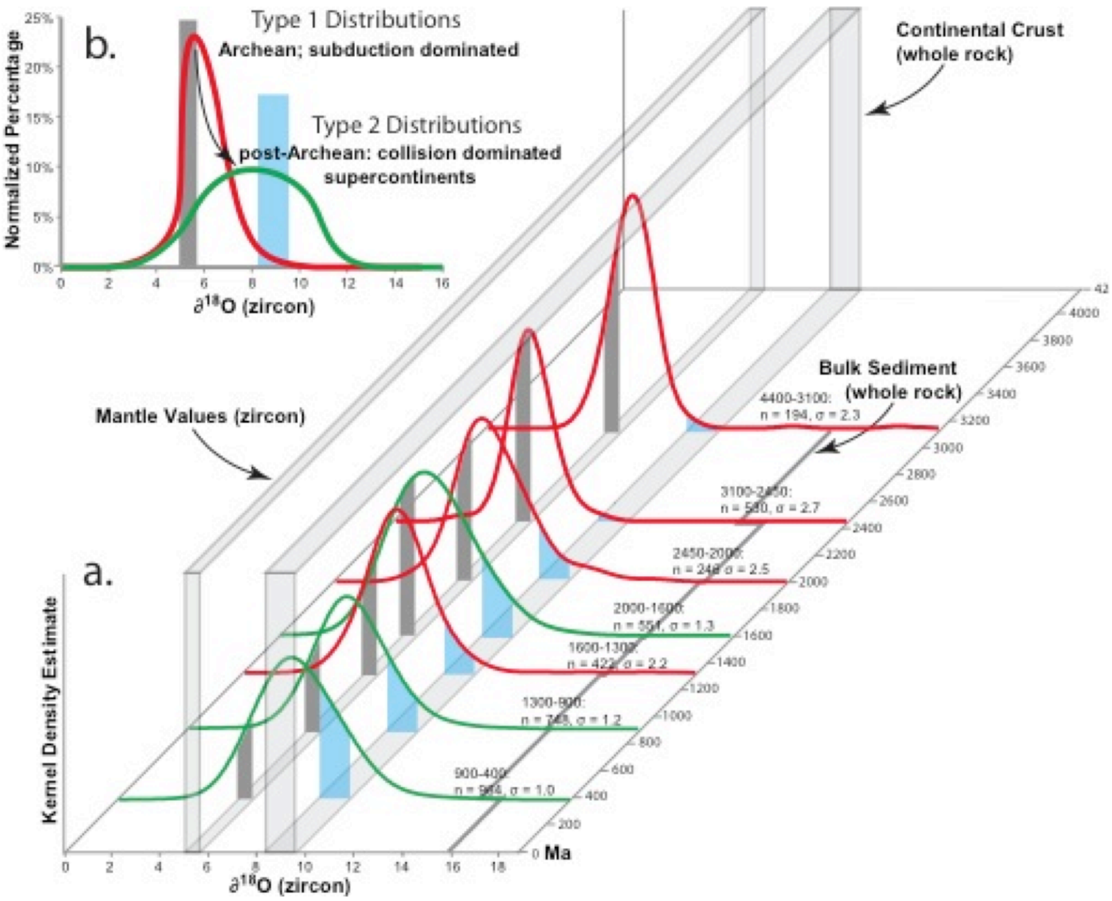

Figure 2.2: a) Distributions of ∂¹⁸O analyses of zircons normalized to total analyses within specific temporal subdivisions (see text for discussion) superimposed on mantle values of Valley et al. (1998). To test the sensitivity of our chosen bin widths, boundaries were adjusted ± 50 My; this had negligible effect on ∂¹⁸O distributions due to the small number of analyses near window margins relative to the thickness of our chosen windows. b) Schematic diagram of ∂¹⁸O distributions of subduction- and collision-dominated temporal subdivisions.

(Gilliam and Valley, 1997; Monani and Valley, 2001) and Yellowstone (Bindeman and Valley, 2001; Bindeman et al., 2008). Given these uncertainties and the smaller dataset within this timeframe, it is not considered further.

Zircons from different time periods exhibit different distributions of $\partial^{18}O$ (Fig. 2.2a) which can be grouped into 2 categories: "Type 1" characterized by a narrow peak between 5.5 and 6.5 ‰ with low variance and skewed toward enriched isotopic values (time intervals 3100-2450, 2450-2000 and 1600-1300 Ma); and "Type 2" marked by a broad peak between 6.5 and 8.0 ‰ with high variance and near-normal distribution (time intervals 2000-1600, 1300-900 and 900-400 Ma) (see Fig. 2.2b).

The secular change in $\partial^{18}O$ of zircons from relatively low and constant during the Archean to a systematic increase through the Proterozoic and Phanerozoic eras is explained by Valley et al. (2005) to reflect the shift in the $\partial^{18}O$ composition of shale through time (see also Land and Lynch, 1996). However, pelitic rocks form on average ~38% of the bulk sediment budget post-3.5 Ga, and so the relative abundance of different sedimentary rock types is approximated with their representative whole rock $\partial^{18}O$ compositions (see Eiler, 2001; Valley et al., 2005; Bindeman, 2008) to re-evaluate whether the $\partial^{18}O$ composition of global bulk sediment varies through time. I adopt the proportions of sedimentary rocks through time calculated by Ronov (1964) using a smoothed estimate of present-day distributions preserved within continental interiors (Fig. 2.3). The estimates of the proportions of sedimentary rocks prior to 3 Ga are poorly constrained, given the

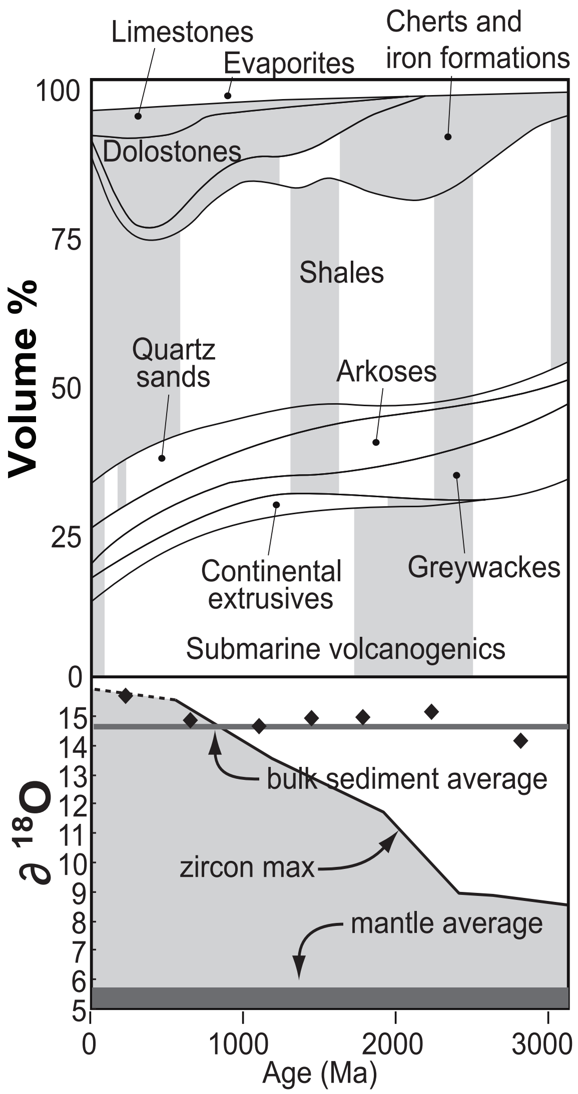

Figure 2.3: Upper panel: volume percent of different sedimentary rock types as a function of age (from Ronov, 1964). Shaded are the lithologies and time intervals wherein $\partial^{18}O$ compositions are constrained (see digital supplement 1 for details and references). Lower panel: $\partial^{18}O$ (WR) values of bulk sediment using temporal subdivisions described in text superimposed over the envelope of maximum zircon $\partial^{18}O$ values within the compiled database. Average mantle $\partial^{18}O$: 5.5 to 5.9 ‰ (Bindeman, 2008).

vanishingly small total preserved mass of sedimentary rock, however the Ronov (1964) treatment is considered appropriate for broad-scale hypothesis testing (e.g. Veizer and Mackenzie, 2003) in the absence of a comprehensive, more sophisticated treatment (as begun, for example, by Veizer and Mackenzie, 2003; Peters, 2006; Erikkson et al., 2013).

Certain sedimentary rock types (shales, chert, and carbonates) appear to have shifted towards higher $\partial^{18}O$ values from the Archean to the present by 3-5 ‰ (Land and Lynch, 1996; Shields and Veizer, 2002; Perry and Leftcariu, 2003; Knauth, 2005) whereas others (sandstones and submarine volcanogenics) have remained nearly constant (Kolodny and Epstein, 1976; Anderson and Arthur, 1983; Eiler, 2001). If the relative proportions of sedimentary lithologies are assumed to be representative of global sediment volumes on the Earth through geologic time, then the isotopic composition of the global sedimentary package can be approximated. Although figure 3 does not illustrate the preservation bias of large sedimentary packages worldwide (Bradley, 2008), it highlights the overall trends within the global sedimentary system through geologic time (Veizer and MacKenzie, 2003) and reveals the relatively constant $\partial^{18}O$ of bulk continental sediment from the Archean through the Phanerozoic ($\partial^{18}O$ ~15 ‰ average). This implies the fractionation factor of ^{18}O during low-temperature surface processes has not changed significantly since the Archean.

Temporal changes in mantle input at finer resolution is evaluated by dividing the dataset into 25 Ma bins (bin width optimisation parameters of Shimazaki and Shinomoto, 2007 suggest 23.1 Ma). The average bulk sediment (discussed below) and average mantle $\partial^{18}O$ (WR) composition (12.0 ‰ and 5.5 ‰ from this study and Bindeman, 2008 respectively) is then used as end members of a mixing trend, which is parameterized as an index of reworking to assess secular evolution (Fig. 2.4).

Our 'reworking index' suggests a roughly equivalent percentage of reworked sediment from ~4.0 Ga to ~2.5 Ga with an increase in reworking after 2.5 Ga (Fig. 2.4). Through the Proterozoic and into the Phanerozoic, the reworking index exhibits a "pulsed"

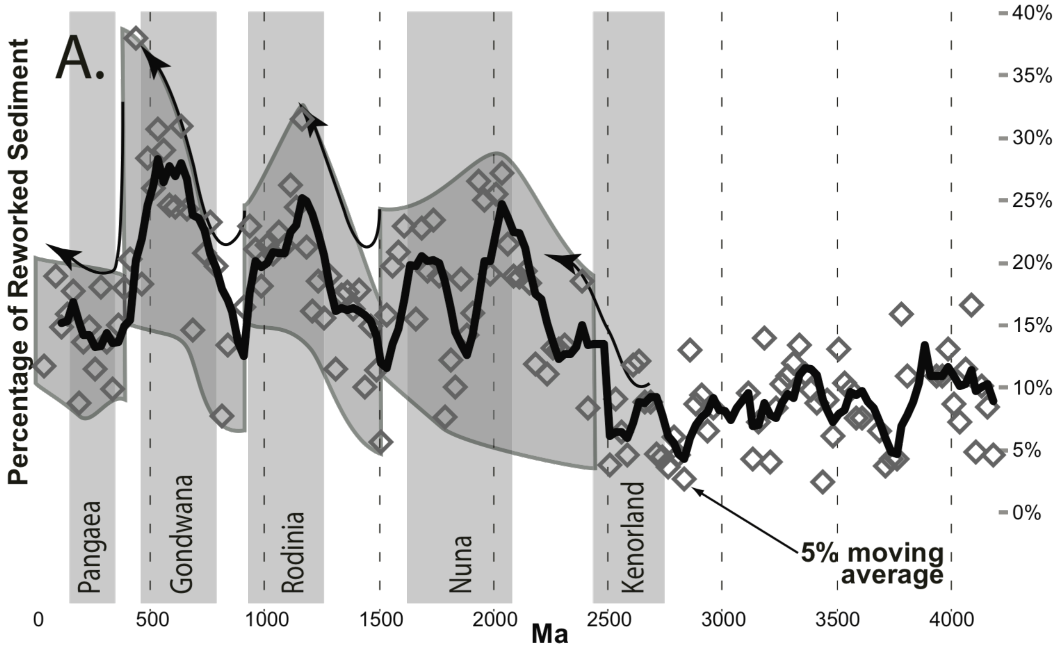

Figure 2.4: Reworking index plotted through time. This reworking index is calculated by plotting the average ∂¹⁸O composition of zircons (in 25 Ma bins) along a univariant mixing line between the ∂¹⁸O composition of the mantle (5.5 ‰) and the calculated average bulk sediment ∂¹⁸O composition (12 ‰). It should be noted that this pre-Proterozoic decreasing trend is based on relatively low sample size > 3.0 Ga (> 3.0 Ga n = 189; 2.5-3.0 Ga n = 451) and a large number of low ∂¹⁸O zircon analyses (< 5.0 ‰) which are likely due to hydrothermal alteration (Valley, 2003).

pattern of sequential increases bounded by abrupt decreases at 1500 Ma, 850 Ma, and 375 Ma.

DISCUSSION

The patterns of peaks and troughs in zircon ∂^{18}O values expressed in figure 4 broadly coincide with all the peaks and troughs of the zircon age distribution, apart from the ~2.7 Ga peak (Fig. 2.1a). Zircons within the ~2.7 Ga age peak lie along the low horizontal trends in the reworking index of ∂^{18}O values prior to 2.5 Ga. This suggests the post-2.5 Ga peaks in zircon age frequency are linked to greater crustal reworking likely accomplished through continental collision and the formation of supercontinents. Although the correlation of the peaks of the reworking index and the timing of the Rodinia and Gondwana is stronger than that for Nuna, the twin peaks associated with the latter are consistent with recent suggestions that the assembly of Nuna occurred during a two stage collisional process; the first forming East and West Nuna at ~2.1 to 1.8 Ga and then combining these two continents from ~1.75 to 1.6 Ga (Condie, 2013; Pisarevsky et al., 2013).

The connection of zircon age peaks with increased crustal reworking implies the increased preservation of continental crust during supercontinent assembly is directly tied to increased crustal reworking associated with continental collisions. This in turn refutes the hypothesis that zircon age frequency is associated with increased juvenile crustal generation during mantle overturn or plume events (e.g. Stein and Hofmann, 1994; Rino et al., 2004; Stein and Ben-Avraham, 2007).

Type 1 $\partial^{18}O$ distributions, with means near to mantle values, clearly mark periods characterized by limited crustal reworking. In contrast, times marked by the growth of thick continental crust, collisional orogenesis, and supercontinents have Type 2 distributions with means towards higher $\partial^{18}O$ values. Minor crustal reworking and isotopic compositions closest to the depleted mantle are characteristic of the Archean (Fig. 2.2). After substantial crustal blocks were formed, the geodynamics of plate convergence increasingly involves continental collisions accompanied by significant crustal reworking, with isotopic chemistries that deviate from depleted mantle compositions (see also Hawkesworth et al., 2010; Cawood et al., 2013).

The onset of modern plate tectonics is thought to have begun between 2.7 and 3.1 Ga (Cawood et al., 2006; Ernst, 2009; Condie and Kröner, 2011; Dhuime et al., 2012). The earliest subduction zones were likely dominated by the formation and accretion of oceanic arcs accompanied by minimal crustal reworking and significant recycling into the mantle (Condie and Kröner, 2011). Continued subduction processes led to increased volume and thickness of preserved continental crust and sedimentary differentiation (Ernst, 2009). These developments in the Earth's thermomechanical attributes were accompanied by continental collisions, crustal thickening and hence in the degree of crustal reworking post-2.5 Ga. The link between the increases in the crustal reworking index and the development of supercontinents highlights the role of continental collision in the preferential preservation of peaks of U-Pb crystallisation ages in the continental crust (Fig.1).

ACKNOWLEDGEMENTS

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Chapter 3 Detrital Zircon Geochronology of the Grenville/Llano Foreland and Basal Sauk Sequence in west Texas

ABSTRACT

U-Pb detrital zircon ages from Mesoproterozoic and Cambrian siliciclastic units in west Texas constrain the depositional setting, provenance, and tectonic history of the region within a late Mesoproterozoic Grenville foreland basin and the early Paleozoic Sauk transgressive sequence. Two key units, the Hazel and Lanoria formations, have similar maximum depositional ages of ~1.1 Ga with detrital zircon populations dominated by detritus derived from the Grenville Orogen (the Llano uplift and eroded equivalents), the ~1.4 Ga Granite-Rhyolite, and the ~1.7-1.6 Yavapai/Mazatzal provinces. These data, combined with sedimentological data, permit interpreting those formations as the proximal and distal deposits, respectively, of a molasse shed into the Grenvillian foreland basin.

Detrital zircons as young as ~520 Ma show that the Van Horn Formation, previously considered to be Precambrian in age, is no older than Middle Cambrian. Further, the overall detrital zircon age spectrum of the Van Horn Formation is similar to that of the overlying Cambro-Ordovician Bliss Formation: both indicate derivation from sources that included the Colorado-Oklahoma Aulacogen, Grenville, Granite-Rhyolite, and Yavapai/Mazatzal provinces. The similarities between the depositional history of the Van Horn and Bliss formations lead us to conclude that the base of the Sauk Sequence in west Texas occurs at the base of the Van Horn Formation. Base level rise associated with the Sauk transgression affected drainage patterns and sediment deposition along southwestern Laurentia some 20 m.y. earlier than previously assumed.

INTRODUCTION

The Grenville Orogeny is a record of the assembly of the supercontinent Rodinia. In Laurentia, syn-collisional detritus shed off the evolving Grenville deformation front is preserved in a variety of settings, ranging from widely dispersed extensional basins (e.g., Midcontinent Rift, Fort Wayne Rift) to broad, fluvial aprons hundreds to even thousands of kilometers in width (Cawood et al., 2007; Hadlari et al., 2012; Rainbird et al., 2012 and references therein). In contrast, the preserved lateral extent of foreland basin deposition (as defined by Allen and Allen, 2005) is thought to be limited to a small number of localities proximal to the Grenville thrust front (Santos et al., 2002; Cawood et al., 2007; Baranoski et al., 2009; Rainbird et al., 2012). In west Texas, the late Mesoproterozoic Lanoria and Hazel formations have been interpreted as having formed in extensional basins (Bickford et al., 2000) or as proximal molasse (Soegaard and Callahan, 1994). Consequently, those units should contain a provenance signal fingerprinting their connection to source terranes exhumed by the Grenville Orogeny. We use laser ablation ICP-MS detrital zircon U-Pb geochronology to assess this prediction and as a potential test of correlations of the formations in west Texas.

Nearly 300 million years after the assembly of Rodinia, the supercontinent fragmented. The initial episode of rifting along Laurentia's margins began in the early Neoproterozoic (~780-740 Ma) and extensional tectonism continued for nearly 250 million years (MacDonald et al., 2013 and references therein). Thermal subsidence analyses have revealed that, despite this protracted period of continental rifting, the rift-to-drift transition occurred near the time of the Precambrian-Cambrian boundary along both the eastern and western margins of Laurentia (~540 Ma) (Armin and Mayer, 1983; Bond and Kominz, 1984; Willams and Hiscott, 1987; Cawood et al., 2001). This is recorded by the progressive onlap and blanketing of North America as preserved in the Sauk Sequence (Sloss, 1963).

The stratigraphic location of the base of the Sauk Sequence has been one of prolonged debate and has generally been ascribed on the basis of sedimentology and biostratigraphy (e.g., Hogan et al., 2011; Peters and Gaines, 2012). In west Texas and New Mexico, its position is placed at the base of the Cambrian-Ordovician Bliss Formation (Hayes, 1972; Amato and Mack, 2012). In New Mexico, this surface is a nonconformity with Mesoproterozoic igneous and metamorphic rocks or the Cambrian Florida Mountains pluton (Clemons, 1998). In west Texas however, the Bliss Formation overlies the braided fluvial sandstones of the Van Horn Formation, the age of which has been ambiguous but typically considered to be latest Precambrian (Denison, 1980; Davidson, 1980) because of the lack of trace- and/or macrofossils. We use detrital zircon U-Pb ages in the Van Horn Formation to assess its maximum depositional age and relation of the Van Horn Formation to the location of the basal Sauk surface in west Texas.

GEOLOGICAL SETTING

Pre-1.3 Ga Rocks

Pre-1.3 Ga basement rocks in the southwestern United States belong to the 1.8-1.6 Ga Yavapai/Mazatzal and 1.5-1.3 Ga Granite-Rhyolite provinces (Fig. 3.1). These units incorporate arc and arc-related supracrustal rocks as well as A-type granites emplaced behind active continental arcs during intra- and back-arc extension (Karlstrom and Bowring, 1993; Slagstad et al., 2009).

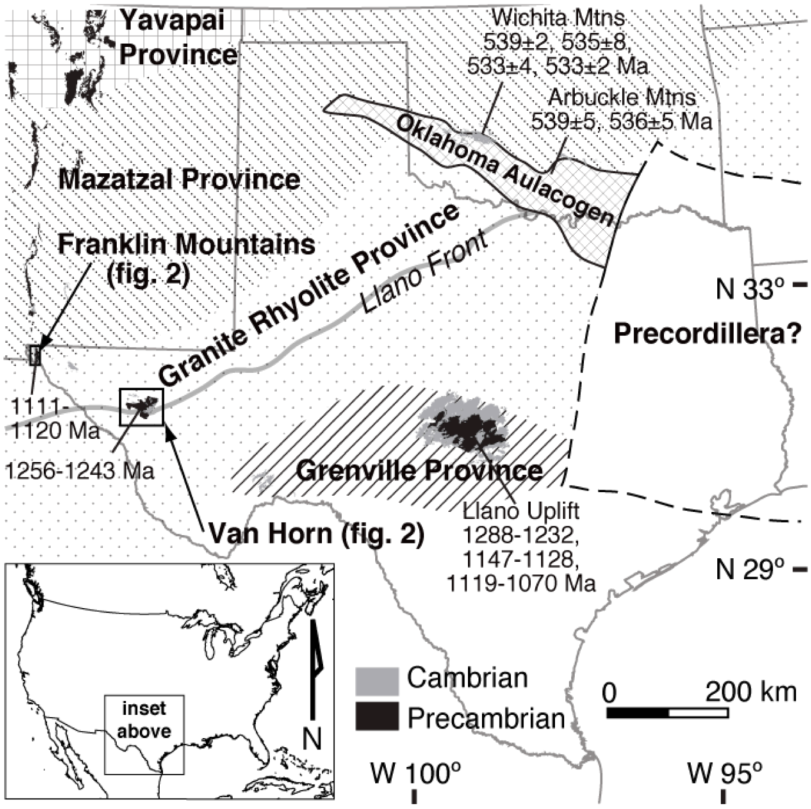


Figure 3.1: Map showing tectonic provinces and distribution of surface exposure of Precambrian and Cambrian rocks (after Whitmeyer and Karlstrom, 2007; Stoeser et al., 2007: http://pubs.usgs.gov/of/2005/1351; position of Precordillera after Thomas, 2006). U-Pb crystallization ages of Mesoproterozoic and Cambrian igneous rocks also indicated (see text for references). Political boundary base map is from Wikimedia Commons and is used under the Creative Commons Attribution/Share-Alike License.

Grenville Orogeny and Sedimentation

Along the southeast Laurentian margin, the Grenville Orogeny (Rivers, 1997; Carr et al., 2000; Chiarenzelli et al., 2010) is attributed to collision with the Kalahari and/or Amazon cratons (Dalziel et al., 2000; Tohver et al., 2006; Jacobs et al., 2008; Hynes and Rivers, 2010). This orogenic episode is archived in rocks forming the broad Grenville Province in southeastern Canada, inliers in the Appalachian Mountains, and the Llano Uplift of central Texas (Fig. 3.1) where three main phases of magmatic activity are known: arc volcanism and accretion between 1288 and 1232 Ma, collision-related magmatism between 1150 and 1120 Ma, and post-collisional magmatism between 1120 and 1070 Ma (Mosher, 1998).

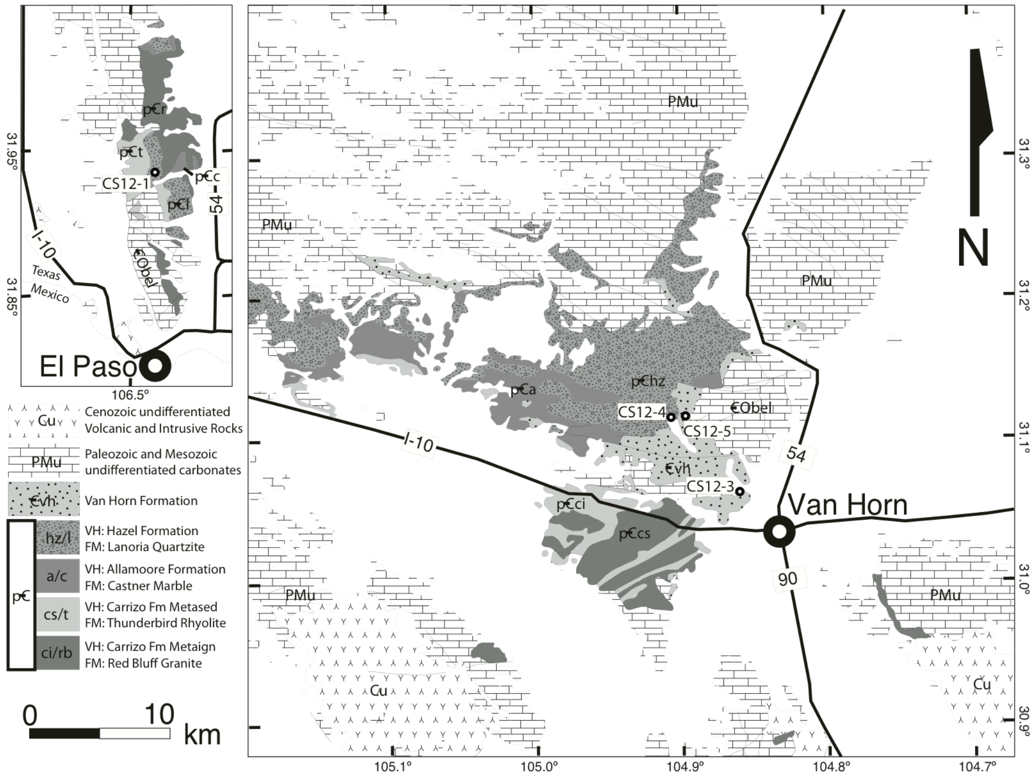


Figure 3.2: Geologic maps (after Stoeser et al., 2007) of the Franklin Mountains (upper left) and Van Horn area; locations of samples collected for detrital zircon analysis are shown.

In west Texas, exposures of Precambrian rocks are restricted to the Franklin Mountains north of El Paso, and the region around Van Horn (Fig. 3.2). The former contains a metasedimentary succession ~1200 m thick (Fig. 3.3), consisting of the basal Castner Marble, the overlying and laterally discontinuous volcanic Mundy Breccia (Bickford et al. 2000), and the Lanoria Quartzite, a ~700 m thick succession of shallow marine sandstone and mudstone (Shannon et al., 1997; Seeley, 1999). These units are capped by the trachytic to rhyolitic ignimbrites and lavas of the Thunderbird Group with a zircon ID-TIMS U-Pb age of 1111 ± 43 Ma (Roths, 1993). The Red Bluff Granite intrudes the entire sequence and has yielded a zircon ID-TIMS U-Pb age of 1120 ± 35 Ma (Shannon et al., 1997).

In the Van Horn area, the post-1.3 Ga stratigraphy (Fig. 3.3) begins with the limestone-bearing Allamoore Formation, which contains a tuff with zircon ID-TIMS U-Pb ages of 1256 ± 5 Ma (Bickford et al., 2000) and 1255 ± 2 Ma (Timmons et al., 2005), and is considered to be broadly equivalent to the Castner Marble, as well as with the Bass Limestone in the Grand Canyon. Overlying the Allamoore is the Tumbledown Formation, a unit of volcanic and carbonate breccia in which a felsic tuff near the top of the formation has yielded an ID-TIMS U-Pb zircon age of 1243 ± 10 Ma (Bickford et al., 2000). The Tumbledown Formation is overlain by the Hazel Formation, which is a ~3000 m thick unit of conglomerate and interbedded fine-grained sandstone whose thickness decreases significantly to the north (Bickford et al., 2000).

The initial Neoproterozoic rifting of the western margin of Laurentia is recorded by a ~780 Ma magmatic event stretching from Utah to the Yukon (Jefferson and Parrish, 1989; Harlan et al., 2003), whereas rifting and associated magmatism along the eastern Laurentian margin occurred between 760-700 Ma (Su et al., 1994; Aleinkoff et al., 1995; Tollo and Hutson, 1996). Thermal subsidence studies show that the eventual rift-to-drift transition occurred along both margins at *ca.* 620-550 Ma (Williams and Hiscott, 1987; Kamo et al. 1989; Levy and Christie-Blick, 1991; Thomas, 1991; Aleinikoff et al., 1995; Cawood et al., 2001; Cawood and Pisarevsky, 2006).

Intra-cratonic Cambrian Magmatism

The Oklahoma-Colorado Aulacogen is interpreted as a failed rift basin (Keller and Stephenson, 2007), which extends from southeast Oklahoma to western Colorado with a spur extending into New Mexico (Fig. 3.1), and is bounded by the Wichita, Sierra Grande, Cimarron, Tusas, and Uncompahgre uplifts (McMillan and McLemore, 2004; Keller and Stephenson, 2007). Extensive exposures of Cambrian-age bimodal igneous

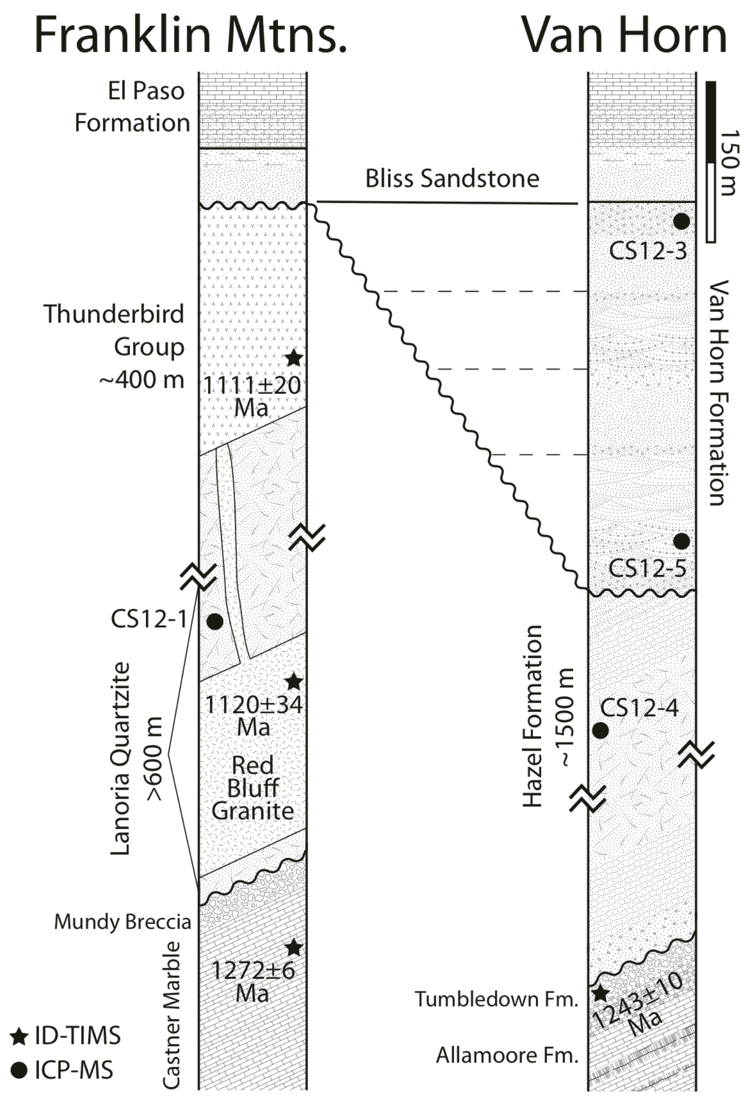


Figure 3.3: Stratigraphy of the Mesoproterozoic to Cambrian rocks of the Franklin Mountains and Van Horn area (after Davidson, 1980; Bickford et al., 2000). Westward onlap of the Van Horn Formation inferred from this study. Radiometric ages (marked with stars) are from Shannon et al. (1996) and Bickford et al. (2000). Locations of detrital zircon samples used in this study are marked with circles.

rocks within the Oklahoma-Colorado Aulacogen indicate that crustal extension (Larson et al., 1985; McMillan and McLemore, 2004; Gilbert and Hogan, 2010) propagated broadly cratonward with ages ranging from 539 Ma to 528 Ma, based on LA-ICP-MS and ID-TIMS U-Pb zircon geochronology (Larson et al., 1985; Lambert et al., 1988; Hames et al., 1995; Hogan and Gilbert, 1998; McConnell and Gilbert, 1990; McMillan and McLemore, 2004). In southwestern New Mexico, the Florida Mountains pluton has also been dated by zircon U-Pb geochronology as crystallizing at ca. 510 Ma (Amato and Mack, 2012).

Sauk Transgression

The breakup of Rodinia and subsequent thermal subsidence of the Laurentian margins facilitated deposition of a thick sequence of largely marine sediments (e.g., Bond and Kominz, 1984; Levy and Christie-Blick, 1991). These define the Sauk Sequence (Sloss, 1963), which spans the late Neoproterozoic to mid-Ordovician and blankets approximately half of North America (outcrop and borehole data; Peters and Gaines, 2012).

The Sauk Sequence overlies progressively older units cratonward, from rift/post-rift related Neoproterozoic sequences along the margins of Laurentia to Archean-Proterozoic basement in the central regions of the craton (Rankin, 1993). This transgressive episode was long lived, with the base of the Sauk Sequence being ~30-40 Ma younger in the craton interior than at the margins. In west Texas, the base of the Sauk Sequence has been placed at the base of the Cambro-Ordovician Bliss Sandstone (Hayes, 1972), but, as detailed herein, we suggest it should be placed at the base of the underlying Van Horn Formation.

Van Horn Formation

The Van Horn Formation near its type locality in Texas consists of > 500 m of conglomerate with varying amounts of interbedded sandstone and, largely because it is devoid of macro- and trace fossils, has been considered to be Precambrian in age (King and Flawn, 1953). It is arkosic and contains abundant lithic fragments derived from the felsic volcanic rocks of the Thunderbird Formation (and its equivalents, e.g., metavolcanic rocks at Pump Station Hills; Thomann, 1981), as well as from the underlying Hazel Formation, and is interpreted as recording deposition in a system of coalescing alluvial fans marked by high-gradient streams (McGowen and Groat, 1971). Where exposed, the Van Horn Formation can be seen to infill and mantle an irregular paleotopography formed on the underlying Hazel Formation.

Bliss Formation and Ordovician Carbonates

The Bliss Formation in Texas is 30 to 80 m thick and consists of medium- to fine-grained quartzitic arenite (LeMone, 1969; Davidson, 1980). The contact between the Bliss and the Van Horn has not been resolved and is variously ascribed to being unconformable or depositional (McGowen and Groat, 1971). On the basis of trilobite and conodont biostratigraphy, the Bliss Formation is known to be Upper Cambrian to Lower Ordovician in age (Taylor et al., 2004). Overlying the Bliss Formation is a thick sequence of Ordovician carbonate rocks documenting the final stages of the Sauk transgression (Hayes, 1972) (Fig. 3.3).

METHODS/RESULTS

Four ~5 kg sandstone samples were collected from the Van Horn and Franklin Mountain regions of west Texas within the Lanoria, Hazel, and Van Horn formations. Zircons were extracted using standard techniques (i.e., Wilfley table, heavy liquid, Franz magnetic separation), mounted in epoxy resin and polished to expose the interior of the grains. Zircons were imaged using cathodoluminescence (CL) and back-scattered electron (BSE) techniques (Fig. 3.4) prior to analysis. Zircon U-Pb geochronology was performed by laser ablation single-collector inductively coupled plasma mass spectrometry (LA-SC-ICP-MS) at the NERC Isotope Geosciences Laboratory, Keyworth, UK (NIGL). All unknown and standard data are reported in the digital supplement 2 and 3.

The instrumentation used for analyses comprises a Nu Instruments Attom single-collector HR-ICP-MS coupled to a New Wave Research UP193 solid-state laser ablation system; the full method is described in Thomas et al. (2013). Laser ablation was accomplished with a 25- or 35-μm diameter spot size with a laser fluence of 2.0-2.2 J/cm2 at 10 Hz for 15 seconds of integration. On-peak dwell times were adjusted to give the best precision on the Pb/Pb and U/Pb ratios for an average zircon composition: 200 µs on ^{202}Hg, ^{204}Pb, ^{204}Hg, ^{206}Pb, ^{208}Pb and ^{232}Th, 3 ms on ^{207}Pb, and 4 ms on ^{235}U. ^{238}U was calculated using ^{235}U * 137.818 (Hiess et al., 2012). The Pb/Pb and U/Pb

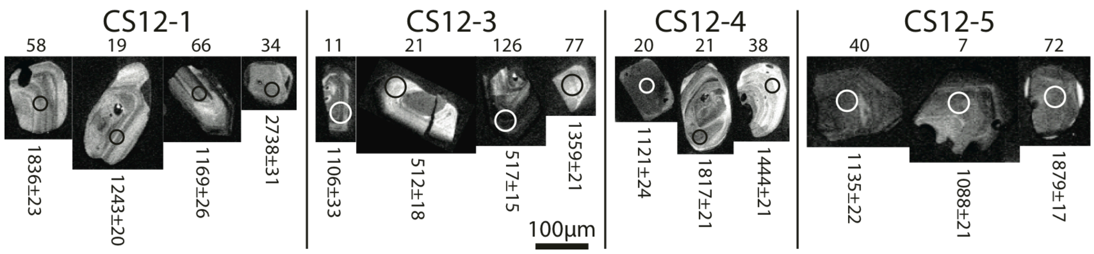


Figure 3.4: Cathodoluminescence (CL) images with analytical spots, and associated ages in representative zircon grains from each sample. CL images have been adjusted only for brightness and contrast.

ratios were normalized to bracketing primary standards of 91500 and GJ-1, on the basis of the average measured value of the standard compared to the ratio determined by ID-TIMS (Wiedenbeck et al., 1995, Jackson et al., 2004; see also DR2). All Pb/Pb and U/Pb standard analyses have an external reproducibility of < 2 % (2 standard deviations). Analyses significantly above ^{204}Pb (common lead) and below ^{207}Pb detection limits (~600 cps and ~2000 cps, respectively) were rejected.

Systematic uncertainties were propagated using quadratic addition incorporating the internal and external reproducibility of the reference material during each analytical

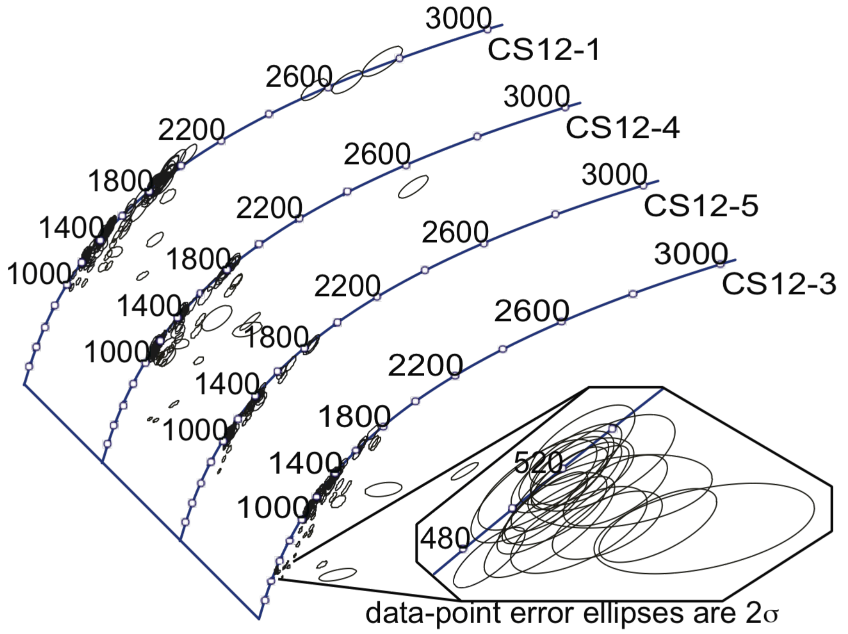
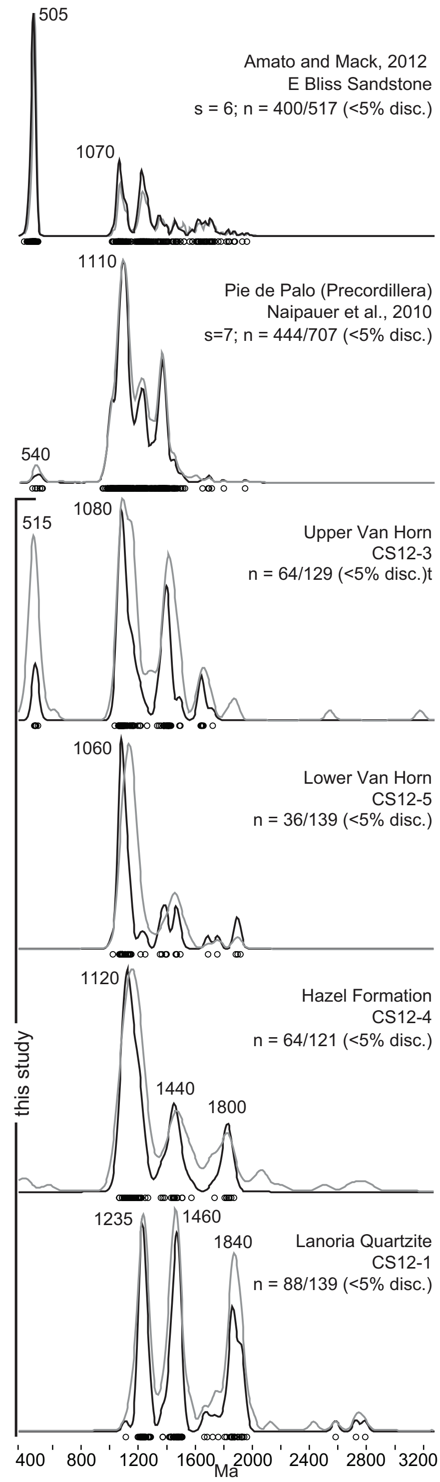


Figure 3.5: U/Pb concordia diagrams of ages (Ma) of zircon grains from each sample. Uncertainties are shown at the 2σ level. Diagram was constructed using Isoplot (Ludwig, 2003).

session; these are the isotopic uncertainties of the reference material as determined by ID-TIMS, long term variance of the NIGL Nu Attom SC-ICP-MS, and decay constant uncertainties (e.g., Schoene et al., 2006). Concordance is defined for ages above 700 Ma using the ratio of ^{206}Pb/^{238}U and ^{207}Pb/^{206}Pb ages and ^{206}Pb/^{238}U and ^{207}Pb/^{235}U ages are used for those younger than 700 Ma. The accepted ages were selected from a 95% concordant subset, wherein the ^{206}Pb/^{238}U and ^{207}Pb/^{206}Pb ages are used for zircons younger and older than 700 Ma, respectively; this age was chosen because there is a natural gap in the ages of the zircons in these samples. Visualization of U-Pb concordia and zircon ages is done using Isoplot 4.0 (Ludwig, 2003) and densityplotter (Vermeesch, 2012) (Figs. 5 and 6). GPS locations of samples are presented in Table 1.



Lanoria Formation

One sample of the Lanoria Formation (sample CS12-1) was collected along the Transmountain Road (Fig. 3.2) from the L3 member of Seeley (1999) in the Franklin Mountains. The sample is a fine- to medium-grained quartz arenite with well-rounded grains and abundant trough and planar cross-bedding. Zircons are mainly colorless with moderate degrees of rounding and sphericity and range in size from 80-300 µm (Fig. 3.4). Zircons from this sample yield an age distribution with three main populations at 1235, 1460 and 1840 Ma ($^{207}Pb/^{206}Pb$), and subordinate populations of 1.6 Ga and Neoarchean ages (Figs. 5 and 6). Although only 115 of the 172 analyses were < 5 % discordant (using $^{206}Pb/^{238}U$ age / $^{207}Pb/^{206}Pb$ age), all analyses have the same age distributions as the concordant subset. The youngest zircon (1124 ± 28 Ma, 3 % discordant) was reanalyzed three times following a re-polishing of the initial ablation pit, which yielded all concordant analyses (< 2% discordant). The weighted mean of the four analyses is 1094 ± 9 Ma (MSWD = 0.9).

Hazel Formation

One sample from the Hazel Formation (sample CS12-4) was collected from the upper sandstone unit in the Millican Hills (Fig. 3.2) of the Van Horn

Figure 3.6: Kernel density estimation (KDE) (black solid line) plots of detrital zircon ages from each sample. Only ages that <5% discordant are used. The grey line represents all analyses regardless of discordance. The open circles below the KDEs represent single analysis. For comparison, the same plots are shown for detrital zircons from the Cambrian Bliss Sandstone east of the Florida Mountains, New Mexico (Amato and Mack, 2012), and late Ediacaran to early Cambrian sediments from the Pie de Palo of Argentina (Naipauer et al., 2010).

area. The sample is composed of a fine- to coarse-grained, litharenite with sub-rounded sand grains. Zircons from this sample are euhedral to well-rounded, range from dark purple to light pink in color, and are 70-500 μm in size.

The zircon age distributions show one dominant population at 1120 Ma, with two subordinate peaks at 1440 and 1800 Ma (Figs. 5 and 6). There is also a large population of discordant analyses at ~1200 Ma (^{207} Pb/^{206} Pb ages) (Fig. 3.5). Similar to the Lanoria

Table 3.1: GPS locations and lithology of samples from this study.

Samples	Formation	Lithology	Latitude	Longitude	Elev (ft)
CS12-1	Lanoria	quartzite	31°53'9.65"N	106°29'12.05"W	5189
CS12-3	Upper Van Horn	coarse sandstone	31°3'48.9"N	104°51'46.2"W	4387
CS12-4	Hazel	medium to fine-grained sandstone	31°6'45.8"N	104°54'12.3"W	4645
CS12-5	Mid Van Horn	coarse sandstone	31°6'59.9"N	104°53'51.1"W	4488

Formation sample CS12-1, nearly half (64 out of 121) of the analyses are discordant (>5 %), although the discordant age peaks show no major differences from those that are concordant.

Van Horn Formation

Two samples were collected from the Van Horn Formation from the southern end of the Millican Hills northwest of the town of Van Horn. One sample was from near the base of the formation (CS12-5) and the other was taken one meter below the contact with the overlying Bliss Formation (CS12-3) (Fig. 3.2; see Table 1 for geographic locations). Both samples are coarse-grained arkoses with small pebbles (< 0.5 mm) of volcanic fragments derived from the underlying Hazel Formation; the fragments are more abundant in the lower sample. Zircons in both samples are mostly light pink to colorless and range from euhedral to subrounded with several angular fragments. The zircons from the lower Van Horn Formation are 80-900 μm in size and those from the upper part of the formation range from 50-500 μm.

The age distribution from the lower Van Horn is similar to the age distribution of the underlying Hazel Formation with dominant age peaks at 1060 and1400-1480 Ma, and a few late Paleoproterozoic grains (Figs. 5 and 6). Similar to the Hazel Formation, there is also a large number of discordant ~1180 Ma analyses: the total number of concordant (< 5 % discordant) zircon analyses is 36 of 139 in the lower sample (CS12-5) and 64 of 129 in the upper sample (CS12-3). The upper Van Horn hosts similar zircon age spectrum (major and subordinate peaks at 1080 and 1400 Ma, respectively) but with an additional variably discordant age population at ~515 Ma. The four youngest concordant zircons (< 0.4 % discordant) yield ages of 511 ± 23, 512 ± 18, 517 ± 15, and 522 ± 16 Ma (^{206}Pb/^{238}U age) (see DR1).

DISCUSSION

Provenance and correlation of the Lanoria and Hazel Formations

The detrital zircon age spectra of the Lanoria and Hazel formations are similar and can be linked to proximal provenance areas along the Grenville/Llano deformation front and the Granite-Rhyolite and Yavapai/Mazatzal provinces (see Figure 2). The offset in the Grenvillian-age peak from 1120 Ma in the Hazel Formation to 1^{235} Ma in the Lanoria Quartzite reflects derivations from different portions of the Grenville orogen. The youngest concordant (< 1% discordance) detrital zircons from the Lanoria and Hazel formations are 1124 ± 28 and 1079 ± 27, respectively. A minimum age of the Hazel Formation is constrained by the age of the Streeruwitz Thrust that emplaces pre-1.3 Ga Carrizo Mountain Group rocks on top of the Hazel Formation. Hornblende from the basal mylonite of the Streeruwitz Thrust yields an 40Ar/39Ar age of 1045 ± 27 Ma (weighted mean calculated from Bickford et al., 2000). These ages, coupled with the age of the Red Bluff Granite (1120 ± 35 Ma) that intruded into the Lanoria Formation constrain the timing of deposition of both units to be broadly contemporaneous.

Depositional Model for west Texas Grenvillian Sedimentation

The Hazel Formation is mostly composed of clast-supported pebble conglomerate with minor interbeds of planar laminated to cross-bedded sandstone and thin mudstone layers having desiccation cracks attesting to subaerial deposition (Soegaard and Callahan, 1994). The Hazel Formation is bounded on the southern margin by the Streeruwitz Thrust that places the Grenvillian-age basement on top of the Hazel Formation. Systematic variation of pebble composition in the Hazel Formation define a shift in source material from dominantly footwall to hanging wall derivation as the Streeruwitz Thrust exhumed the Grenvillian basement (Soegaard and Callahan, 1994). The Lanoria Formation outcrop belt is ~180 km NE from that of the Hazel Formation. Its facies character, paleocurrent data, and significant northward thinning suggest sediment was shed from southern highlands (present coordinates) onto a wave- and tide-dominated marine platform (Seeley, 1997, 1999). Previous interpretations have considered the Lanoria and the Hazel formations as being temporally discrete units (e.g., Bickford et al., 2000; Timmons et al., 2005). Given our findings, with both units displaying similar age spectra and depositional age constraints, and combining those with the sedimentological observations of Seeley (1997, 1999) and Soegaard and Callahan (1994), It is posited that the Hazel and Lanoria formations represent, respectively, a proximal to distal transect of a non-marine to marine system marginal to the Grenville highlands/Llano deformation front (Fig. 3.7a).

Provenance and timing of the Van Horn Formation

The vast majority of clasts (50-75%) present in the Van Horn Formation are felsic volcanic detritus, presumably derived from the volcanogenic formations in the west Texas area (McGowen and Groat, 1971). Zircons from the two Van Horn samples analyzed in this study further attest to input from these source regions (~1.0-1.2 Ga). However, the sample collected from the upper part of the Van Horn Formation also contains Cambrian-age zircons. The provenance for these zircons is somewhat problematic in that palaeocurrent data (mostly southwesterly flow directions) would appear to discount the locations of Cambrian granitoids in New Mexico and Oklahoma (Amato and Mack, 2012 and references therein) as sources, hence were these zircons were derived remains speculative. Nevertheless, these zircons show that at least the upper Van Horn Formation is no older than Cambrian, not Precambrian, in age. There is no obvious break between the upper and lower parts of the Van Horn Formation, thus the entire unit is potentially Cambrian in age. If an intra-formational hiatal surface is present, it is cryptic and could be of considerable duration.

Zircon age spectra from the overlying Bliss Sandstone in southwestern New Mexico are somewhat variable, but show ~1.4 and 1.7 Ga peaks with some samples containing a dominant peak at ~500 Ma (Amato and Mack, 2012). The compiled zircon age spectra of the Bliss Sandstone are similar to that of the upper portion of the Van Horn Formation indicating that both share broadly similar provenance.

Depositional Model for the Van Horn Formation and Implications for the Sauk Transgression

The Van Horn Formation is interpreted to be a south-prograding alluvial fan to braided fluvial system that infilled and buried paleotopography (McGowen and Groat, 1971; Fig. 3.7b). This is similar in depositional style to other siliciclastic units that mark the basal Sauk Sequence such as the Mount Simon Formation in Ohio (Reuter and Watts, 2004; Leetaru and McBride, 2009), Flathead Sandstone of northern Wyoming (Bell, 1970), and Tapeats Sandstone of northern Arizona (Rose et al., 2006).

As originally noted by Sloss (1963), the age of the basal Sauk Sequence boundary is progressively older toward the cratonic margins. In southeast California, the lower boundary of the Sauk Sequence is either at the lower member of the Wood Canyon Formation (Fedo and Cooper, 1990) or the base of the Stirling Quartzite (Hogan et al., 2011) and corresponds in age to the latest Ediacaran (see Colpron et al., 2002; MacDonald et al., 2013) post-dating the final rift event at ca. 580-560 Ma. The overlying sedimentary succession records the rift-to-drift transition along the southern margin of Laurentia; for example, and from west to east, the Zabriskie, Proveedora, Tapeats, Blosa, Coronado, and Bliss formations (see Fig. 3.8 for references). This age progression is also shown by progressively younger concordant detrital zircon U-Pb ages from the western margin to the cratonic interior: the youngest concordant zircon within the Wood Canyon Formation of SE California is 547 ± 34 Ma (< 2 % discordant, LA-ICPMS; Stewart et al., 2001; from the geochron.org database), 521 ± 3 Ma for the Bolsa Formation of South-Central Arizona (< 1 % discordant, LA-ICPMS; Stewart et al., 2001), 502 ± 12 Ma for the Coronado Sandstone of Southeast Arizona (< 1 % discordant, LA-ICPMS; Stewart et al., 2001), and 459 ± 23 Ma for the Bliss

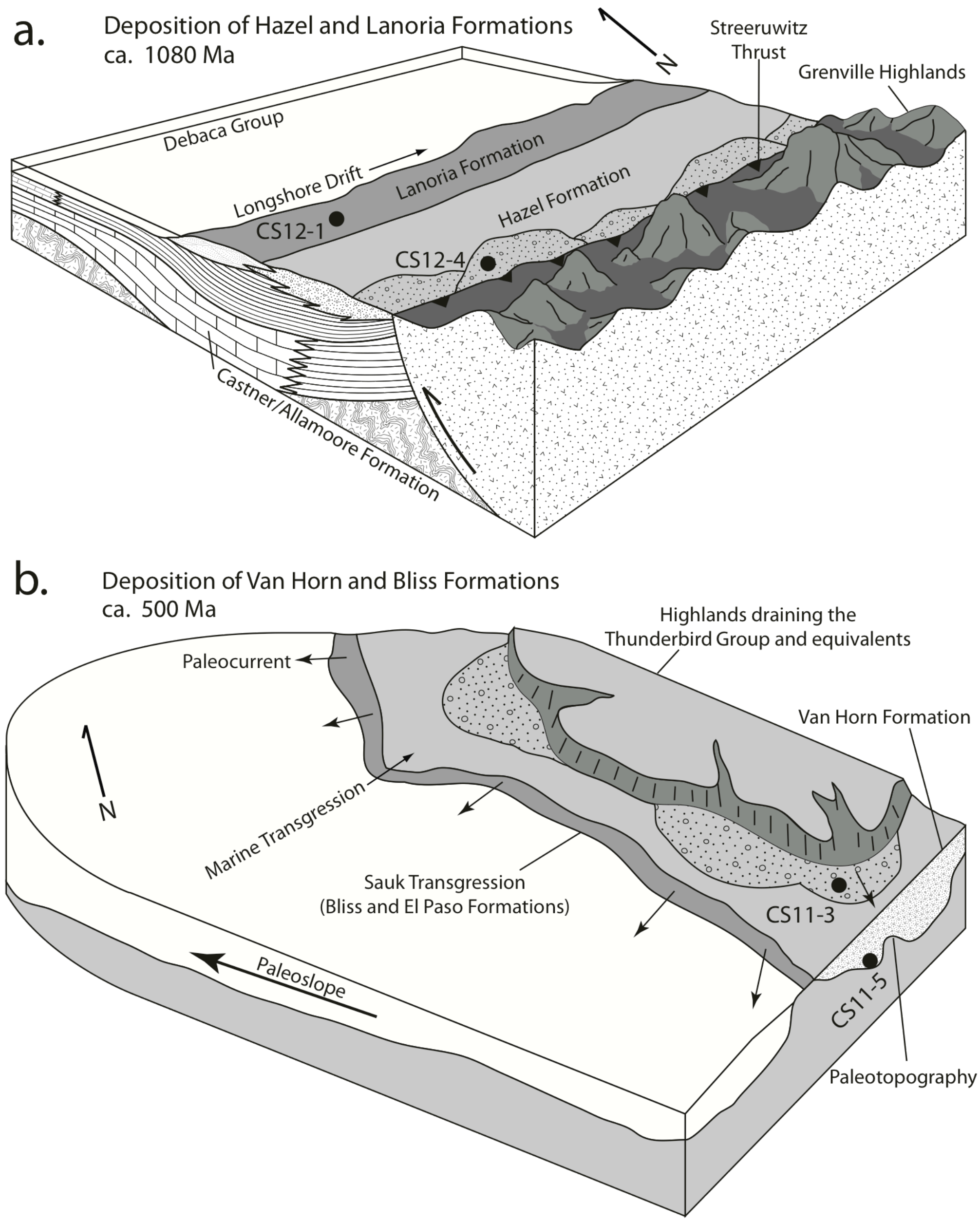


Figure 3.7: Schematic sedimentary model for a) depositional setting of the proximal (Hazel Fm) and distal (Lanoria Fm) deposits of the Grenvillian foreland and b) the Van Horn Formation for the Sauk Sequence transgression in west Texas. Paleocurrent information is taken from Seeley (1999), Soegaard and Callahan (1994) for (a) and Stewart et al. (2000), McGowen and Groat (1971) for (b).

Formation of Southern New Mexico and west Texas (< 1 % discordant, LA-ICPMS; Amato and Mack, 2012) (Figs. 8 and 9). It should be noted that the youngest concordant zircon age determined for these units is substantiated by the bio- and lithostratigraphy throughout the basal Sauk Sequence.

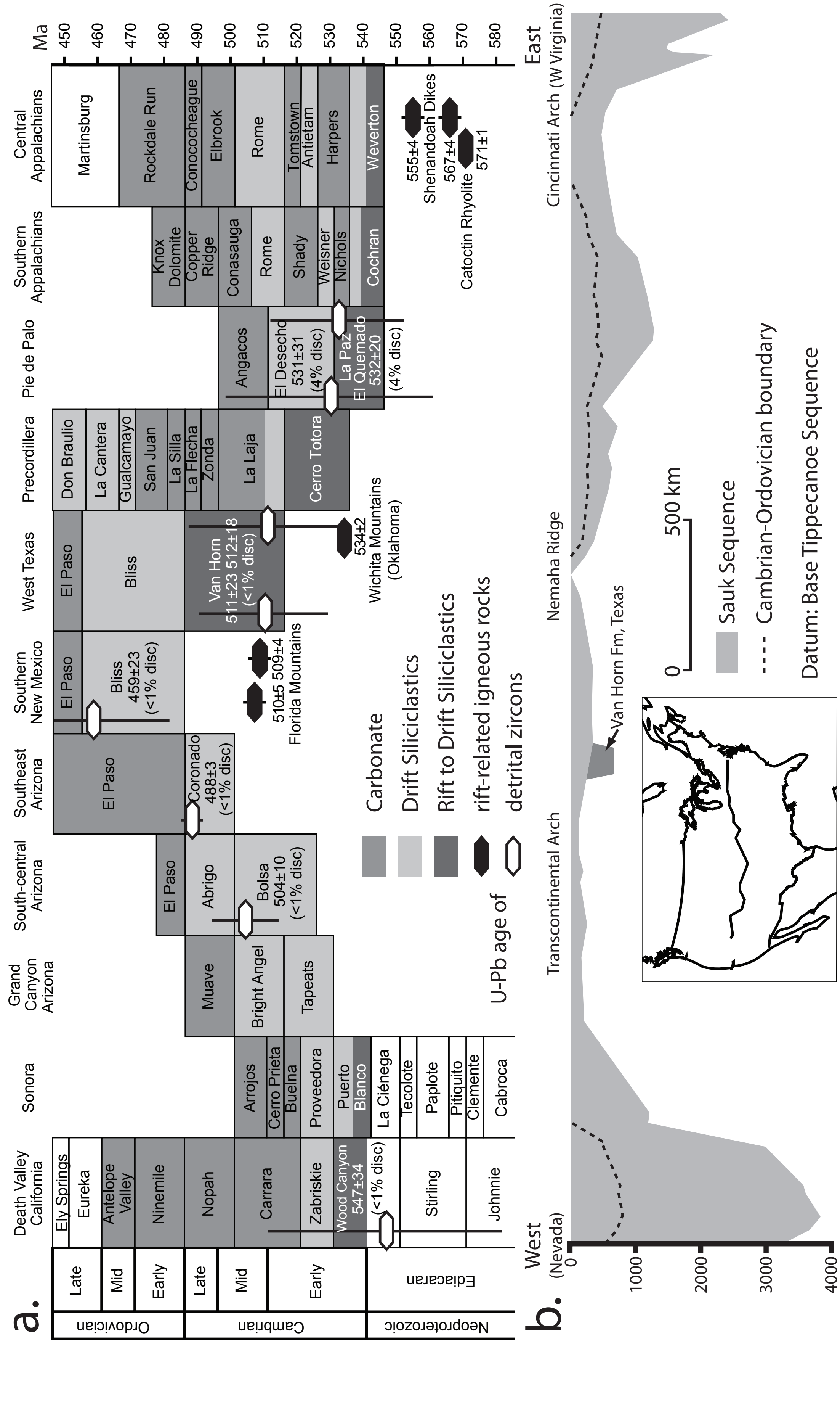
Throughout the western margin of Laurentia, the majority of paleoflow directions within the Sauk Sequence are directed to the west with few exceptions (see Stewart et al., 2001; Hogan et al., 2011). However, those for the Sauk Sequence in New Mexico and west Texas display a shift from south-southeast in New Mexico and Texas to west-southwest in northern Chihuahua and Arizona (McGowen and Groat, 1971; Stewart et al., 2001; Amato and Mack, 2012). This implies a northwest-facing paleoslope or possible topographic high along the eastern edge of the Transcontinental Arch (see Amato and Mack, 2012) during Middle Cambrian time. Further, if the southern margin of Laurentia rifted later than the western one (Dalziel et al., 1994; Poole et al., 2005; Naipauer et al., 2010), an overall westward depositional slope could have been generated due to the earlier onset of differential thermal subsidence in the west.

East of the Transcontinental Arch, the basal Sauk Sequence strata are progressively older eastward (see Thomas, 1991). The two youngest concordant detrital zircon ages from the Van Horn Formation in our study are 511 ± 23 Ma and 512 ± 18 Ma (< 1 % discordant) and support the overall younging pattern in the maximum depositional ages of the Sauk transgression from the margin of the craton towards the interior.

Additionally, in the tectonic reconstructions that place the Precordillera east of Texas (Thomas and Astini, 1991), then that region becomes a viable provenance as indicated by the El Quemado and El Desecho formations of the Pie de Palo region of western Argentina (Fig. 3.6) that have yielded concordant zircon ages of 532 ± 20 and 531 ± 31

Figure 3.8 (on following page): a) Generalized stratigraphic time-space diagram representative of the Neoproterozoic to Ordovician sedimentary units across south-central Laurentia. The youngest highly concordant detrital and rift-related igneous zircons are plotted as additional depositional constraints. Various rock types and general depositional settings as per the following references. Death Valley stratigraphy: Heaman and Grotzinger, 1992; Prave, 1999; Corsetti and Kaufman, 2003; Hogan et al., 2011; detrital zircons: Stewart et al., 2001. Sonora stratigraphy: Stewart et al., 2002; Farmer et al., 2005; Stewart, 2005; Sour-Tovar et al., 2007. Grand Canyon stratigraphy: Karlstrom et al., 2000 and references therein. South-central and southeast Arizona stratigraphy: Hayes, 1972; detrital zircons: Stewart et al., 2001. Southern New Mexico stratigraphy: Hayes, 1972; detrital/igneous zircons Amato and Mack, 2012; west Texas stratigraphy: Lemone, 1969; Hayes, 1972; detrital zircons this study. Rift-related zircons from the Wichita Mountains: Gilbert and Hogan, 2010. Precordillera stratigraphy: Finney et al., 2005. Pie de Palo stratigraphy and detrital zircons Naipauer et al., 2010. Southern Appalachians stratigraphy: Tollo et al., 2010; Tull et al., 2010; Chakraborty et al., 2012. Central Appalachians stratigraphy: Simpson and Sundberg, 1987; Astini et al., 1995; Southworth et al., 2009; Burton and Southworth, 2010; Tollo et al., 2010; rift-related zircons Aleinkoff et al., 1995 (recalculated by Burton and Southworth, 2010); Southworth et al., 2009. Position of Sonora is restored along the Mojave Megashear as per Stewart (2005) and Precordillera/Pie de Palo restored within the Ouachita Embayment of Thomas (2006). Geologic timescale is after Walker et al. (2012). b) Diagrammatic cross-section of Sauk Sequence through central North America. Note that the datum in the section is the base of the Tippecanoe Sequence. Redrawn from Bally (1989) and Burgess (2008).

Ma, respectively (< 4 % discordant) (Naipauer et al., 2010). Several rift-related igneous units exposed east of the Transcontinental Arch also provide important depositional constraints on the Sauk Sequence, such as those in the Wichita Mountains (534 ± 2 Ma; Gilbert and Hogan, 2010), the Shenandoah Felsic Dikes (555 ± 4 Ma and 567 ± 4 Ma; revised from Aleinkoff et al. (1995) by Burton and Southworth, 2010), and the Catoctin Rhyolite (571 ± 1 Ma; Southworth et al., 2009). It is noteworthy that the timing of deposition based upon biostratigraphic studies substantiates the maximum depositional age as constrained by the youngest most concordant single zircon analysis from this and other detrital zircon studies (e.g. Wood Canyon Formation: Hunt, 1990 and Hagadorn et al., 2000; Bolsa Formation: Jones and Bacheller, 1953 and Gilluly et


a.
b.
Death Valley California
Sonora
Grand Canyon Arizona
South-central Arizona
Southeast Arizona
Southern New Mexico
West Texas
Precordillera
Pie de Palo
Southern Appalachians
Central Appalachians
Ma
Ordovician
Cambrian
Neoproterozoic
Late
Mid
Early
Ediacaran
Ely Springs
Eureka
Antelope Valley
Ninemile
Nopah
Carrara
Zabriskie
Wood Canyon 547±34
(<1% disc)
Stirling
Johnnie
Arrojos
Cerro Prieta
Buelna
Proveedora
Puerto Blanco
La Ciénega
Tecolote
Paplote
Pitiquito
Clemente
Cabroca
Muave
Bright Angel
Tapeats
El Paso
Abrigo
Bolsa 504±10 (<1% disc)
Coronado 488±3 (<1% disc)
Bliss 459±23 (<1% disc)
510±5 509±4 Florida Mountains
Bliss
Van Horn 511±23 512±18 (<1% disc)
534±2 Wichita Mountains (Oklahoma)
Don Braulio
La Cantera
Gualcamayo
San Juan
La Silla
La Flecha
Zonda
La Laja
Cerro Totora
Angacos
El Desecho 531±31 (4% disc)
La Paz
El Quemado 532±20 (4% disc)
Knox Dolomite
Copper Ridge
Conasauga
Rome
Shady
Weisner
Nichols
Cochran
Martinsburg
Rockdale Run
Conococheague
Elbrook
Tomstown
Antietam
Harpers
Weverton
555±4 Shenandoah Dikes
567±4 Catoctin Rhyolite
571±1
Carbonate
Drift Siliciclastics
Rift to Drift Siliciclastics
rift-related igneous rocks
U-Pb age of detrital zircons
West (Nevada)
East Cincinnati Arch (W Virginia)
Transcontinental Arch
Nemaha Ridge
Van Horn Fm, Texas
0 500 km
Sauk Sequence
Cambrian-Ordovician boundary
Datum: Base Tippecanoe Sequence
0 1000 2000 3000 4000

al., 1956; Coronado Formation: Ethington and Clark, 1964; Bliss Formation: Lemone, 1969; La Paz and El Desecho formations: Naipauer et al., 2010).

The redefinition of the basal Sauk Sequence in west Texas described in this study shifts the timing of base-level rise and associated marine transgression from the Cambrian-Ordovician boundary (within the Bliss Formation) at ~490 Ma to ~512 Ma within the Van Horn Formation. The beginning of the Sauk transgression occurred on the east and west margins of Laurentia at ~550 Ma (Fig. 3.8).

CONCLUSIONS

Detrital zircon ages and depositional facies determinations from the Hazel and Lanoria formations in west Texas indicate these strata represent broadly coeval distal to proximal deposits of the Grenvillian foreland basin, respectively. Detrital zircons were primarily derived from the Llano (Grenville), Granite-Rhyolite and Yavapai/Mazatzal provinces.

Some 400 Ma following the Grenville Orogeny and formation of Rodinia, Laurentia began rifting along its western and eastern margins (e.g., Li et al., 2008). The thermal subsidence associated with the breakup of Rodinia gave rise to a significant marine transgression responsible for the deposition of the Sauk Sequence (Sloss, 1963). The base of the Sauk Sequence in Texas is herein redefined as the base of the Van Horn Formation given similarities and compatibility between the sedimentary facies and detrital zircon age distributions of the Van Horn Formation to the overlying Cambrian Bliss Formation; in both units, distributions display a main peak at ~1150 Ma with other significant peaks attributable to derivation from rocks in the Oklahoma Aulacogen, Granite-Rhyolite and Yavapai/Mazatzal provinces.

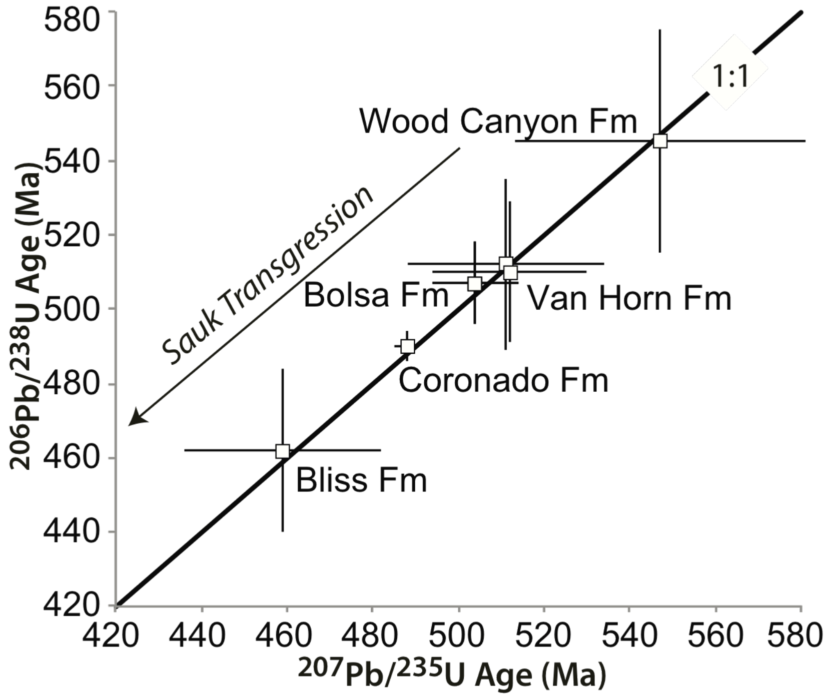


Figure 3.9: $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ ages of the youngest detrital zircons from the basal units within the Sauk Sequence in southwestern Laurentia. The 1:1 line represents perfect concordance between the $^{206}Pb/^{238}U$ and $^{207}Pb/^{235}U$ ages. It is important to note that the degree of concordance is consistent with both U/Pb isotopic systems further substantiating the reliability of these ages. References for detrital zircon ages found in Fig. 3.8 caption.

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Chapter 4 Intermontane basins and bimodal volcanism at the onset of the Sveconorwegian Orogeny, southern Norway

ABSTRACT

The late Mesoproterozoic Bandak succession in southern Norway is characterized by interlayered quartzites and meta-volcanic rocks that record distinct phases of sedimentation and eruption of bimodal magmatism within rift basins. Deposition of the Ofte and Røynstaul formations postdates an unconformably underlying 1155 ± 3 Ma porphyry and predates the unconformably overlying Gjuve, Morgedal, and Eidsborg formations that were deposited < 1118 ± 17 Ma based on new detrital zircon U-Pb geochronology. The Ofte and Røynstaul formations display diverse detrital zircon age spectra implying derivation from a wide array of sources. The Morgedal and Gjuve formations have unimodal U-Pb age spectra, suggesting input from a single source and probably accumulation in restricted basins. The succeeding Eidsborg Formation displays a wide range of detrital zircon age peaks indicative of input from more varied source regions. Whole rock geochemistry and Nd isotopic signatures suggest the rhyolite of the Dalaa Formation was formed from anatexis of c. 1500 Ma crust. Those of the mafic volcanic rocks indicate a mantle source that has been previously enriched through subduction, and variable contamination with older continental crust, or melts derived from it (i.e. the Dalaa Formation). The mafic lithologies reveal decreasing amounts of crustal contamination higher in the section, compatible with increasing amounts of extension and a thinner crustal column.

Age, sedimentological, and geochemical data for the volcanosedimentary units in the Bandak succession record an episode of intracontinental extension associated with formation of a series of intermontane basins. We speculate that these localized basins were formed at varying stages of extensional collapse following a pulse of regional orogenesis. The Ofte and Røynstaul formations accumulated during rifting and were followed by bimodal volcanism within the Morgedal, Dalaåi, and Gjuve formations. The Eidsborg Formation, at the top of the succession, records post-extension

transgressive sedimentation. This tectonic scenario represents a pre-Sveconorwegian stage of orogenesis that can be related to convergent margin processes.

Keywords: Sveconorwegian orogeny, detrital zircons, intermontane basins, bimodal volcanism

INTRODUCTION

The late Mesoproterozoic to early Neoproterozoic eras (1.3 to 0.9 Ga) are characterized globally as a time of intense orogenic activity related to the assembly of the supercontinent Rodinia (e.g., Hoffman, 1991; Li et al., 2008). The magmatism related to this time period is seen on every continent and is dominated by bimodal mafic and felsic volcanic rocks and anorthosite-mangerite-charnockite-granite suites (Emslie and Hunt, 1990; Higgins and van Breemen, 1992; Fitzsimons, 2000; Keppie et al., 2001; Bingen et al., 2003; Fioretti et al., 2005). Although much of the magmatism preserved in this orogenic episode formed during the latest stages of orogenesis (~1.05-0.92 Ga), the magmatic record of the earliest stages constrains geodynamic processes during the initial stages of continental assembly. In southern Norway, the geological record from the 1.3-1.1 Ga period is dominated by a widespread magmatism and sedimentation speculatively associated with a convergent margin located along the southwest margin of Fennoscandia (Fig. 4.1; Brewer et al., 2004; Roberts et al., 2011).

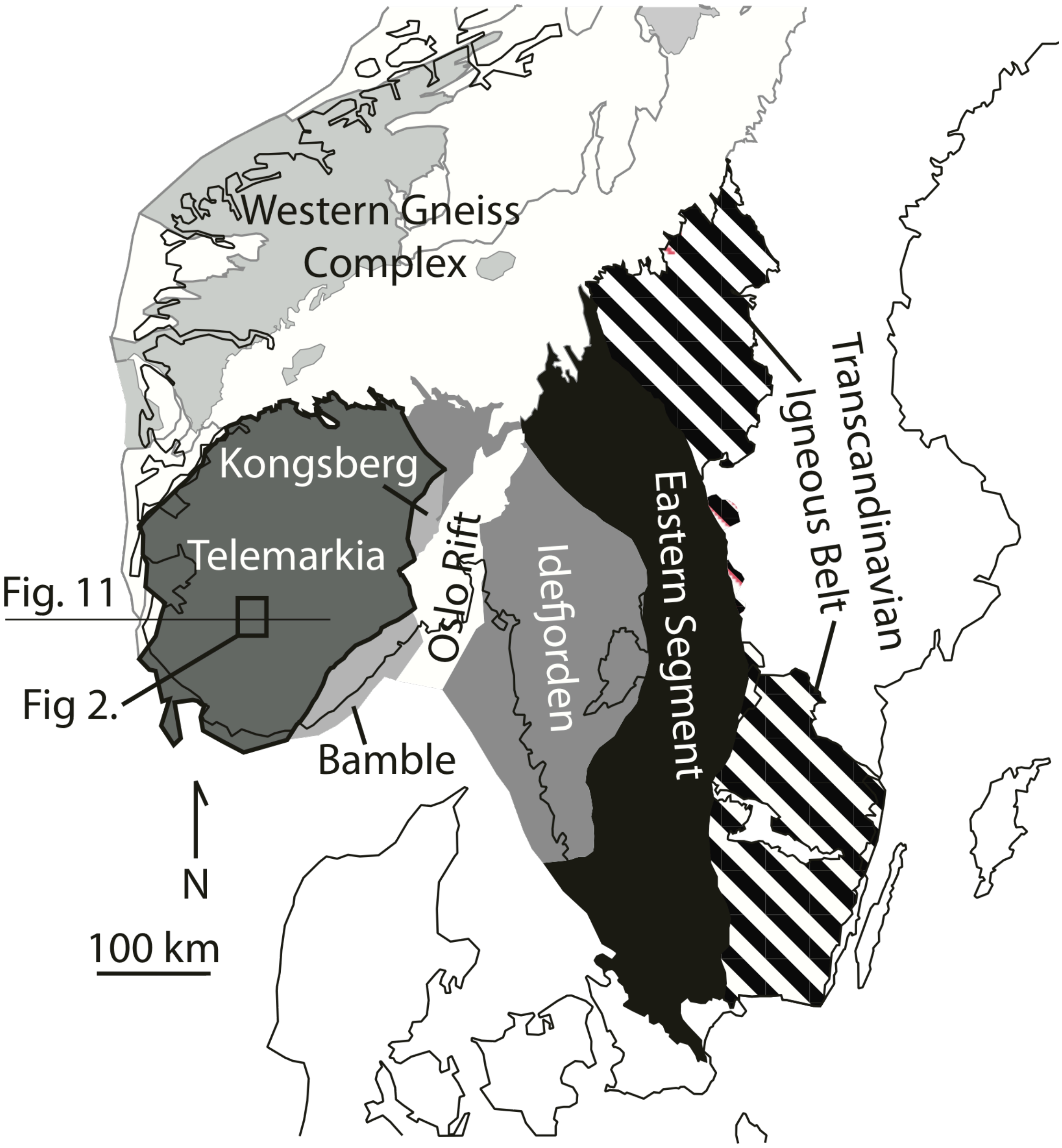


Figure 4.1: Map of SW Fennoscandia showing the main Proterozoic lithotectonic units (after Bingen et al., 2008).

This study explores the development of basins associated with the bimodal magmatism and related tectonism as recorded in 1.2-1.1 Ga sedimentary and volcanic rocks of the Telemark region of southern Norway. Specifically, the Bandak succession in the central Telemark region was selected for this study because it represents a key time interval during the 1.48-1.15 Ga 'interorogenic' period immediately preceding the Sveconorwegian Orogeny (Åhäll and Connelly, 1998; Bingen et al., 2003; Bingen et al., 2008; Slagstad et al., 2013). We report new U-Pb, Hf, and O data from detrital zircons throughout the Bandak succession, and whole-rock geochemistry of interlayered bimodal volcanic rocks. These data constrain the depositional timing of sedimentary units and petrogenesis of the volcanic rocks, and enable comparison with younger geologic analogues to augment our understanding of late Mesoproterozoic geodynamics.

GEOLOGIC SETTING

The Fennoscandian Shield is composed of an Archean core in the northeast that is rimmed to the south and west by progressively younger Proterozoic crustal domains (Gaál & Gorbatschev, 1987; Bingen et al., 2008). The youngest of these comprise the 1140-920 Ma Sveconorwegian province (Fig. 4.2), which has been divided into five 'terranes', separated by approximately orogen-parallel shear zones (Bingen et al., 2008). In the tectonic framework of Bingen et al. (2008) these terranes are considered to be both parautochthonous (Eastern Segment) and autochthonous (Idefjorden, Kongsberg, Bamble and Telemarkia terranes). The most westerly and youngest is the Telemarkia terrane; some workers divide this into two crustal 'blocks', Hardangervidda-Rogaland and Telemark (Andersen, 2005), whereas others define four sectors, (Hardangervidda, Suldal, Rogaland, and Telemark; Bingen et al., 2005; Fig. 4.1). In either case, the Telemarkia terrane displays crust formation ages between 1.52 and 1.48 Ga (Bingen et al., 2005; Roberts et al., 2013). Within the Telemark sector (see Fig. 4.1) there is a ~10 km thick succession of sedimentary and volcanic rocks colloquially referred to as the Telemarksuiten or Telemark supracrustals (e.g. Dons, 1960; 1972; Sigmond, 1978) that can be separated into several temporally distinct volcanosedimantary basins ranging from ~1.5 to 1.1 Ga in age (e.g. Bingen et al., 2002,

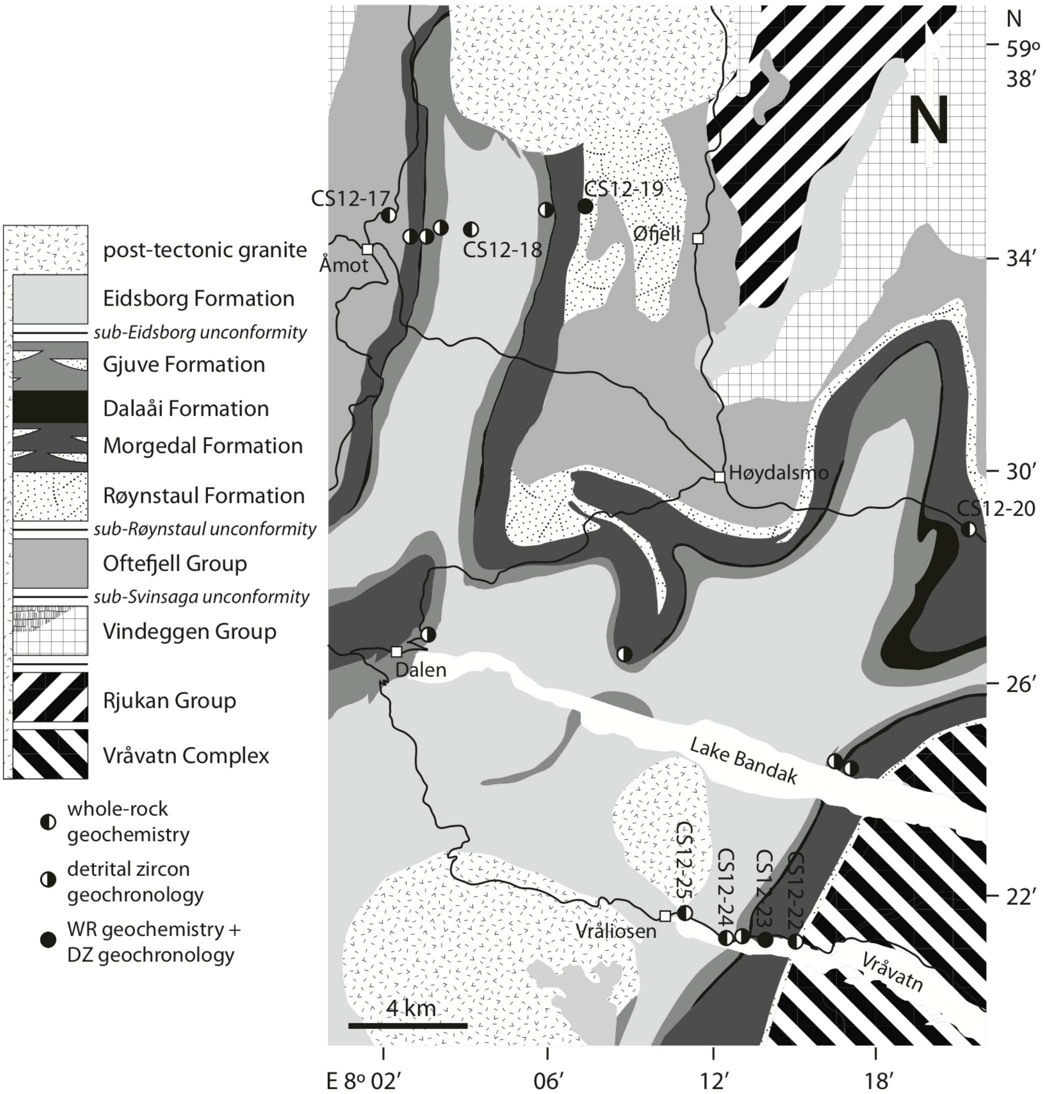


Figure 4.2: Simplified geologic map and stratigraphy of the southern part of the Telemark supracrustals near Lake Bandak (after Dons, 2004). Straigraphic scheme follows Laajoki and Lamminen (2006).

2003; Brewer et al., 2004; Laajoki et al., 2002; Bingen et al., 2008; Pedersen et al., 2009; Roberts et al., 2011). In the centre of the Telemark sector, the supracrustal rocks have been divided into the Rjukan, Vindeggen, Oftefjell, and Høydalsmo groups and the overlying Eidsborg Formation, each separated by major angular unconformities (see Dons, 2004; Laajoki et al., 2002; Laajoki and Lamminen, 2006; Köykkä, 2010; Lamminen et al., 2011). The Rjukan and Vindeggen groups were deposited prior to ~1350 Ma, whereas the other units were deposited between ~1170 Ma and ~1000 Ma. A number of terminologies and groupings have been proposed for this suite of supracrustal rocks, and here we follow the terminology of Laajoki et al. (2002).

The Bandak succession (Fig. 4.2) is a ~4 km thick volcanosedimentary succession inferred to have accumulated in a non-marine extensional basin (Menuge and Brewer, 1996; Köykkä and Laajoki, 2009). The Oftefjell Group is composed of five units: the uppermost Ofte Formation and the basal Svinsaga Formation and three intercalated felsic volcanic units (termed Ljosdalsvatnet, Ofte porphyry 2, and Ofte porphyry 3; Laajoki et al., 2002). This group is bounded by regional angular unconformity surfaces (Laajoki and Lamminen, 2006). The Høydalsmo Group consists of the Røynstaul, Morgedal, Dalaå, and Gjuve formations (Brewer et al., 2002; Laajoki et al., 2002). The Røynstaul Formation is composed of ~500 m of sedimentary and volcanic rocks, dominated by quartzite and metabasalt with minor metaconglomerate and metafelsic volcanic rocks (Laajoki and Lamminen, 2006). Overlying the Røynstaul Formation the Morgedal and Gjuve formations define a thick sequence of sub-aerial metabasalt flows with minor intercalations of quartzite. Flow margins are often highly altered, containing abundant epidote and chlorite (Brewer et al., 2002). The metafelsic volcanic unit of the Dalåii Formation separates the Morgedal and Gjuve formations and is comprised of both welded and non-welded tuffs (Brewer et al., 2002). The base of the youngest unit, the Eidsborg Formation is typified by a metaconglomerate on an angular unconformity (Lamminen et al., 2011) and it is predominantly composed of quartzite with some metaconglomeratic intercalations. The base of the Eidsborg Formation is deposited variably on the Gjuve Formation, but also on the Rjukan and Seljord groups to the north and east of the region around Lake Bandak. This implies that the previous units were partially exhumed prior to deposition of the Eidsborg Formation (Lamminen et

Table 4.1: GPS locations and lithology of samples from this study.

Sample	Formation	Lithology	Latitude	Longitude
CS12-17	Ofte	Quartzite	59°34'46.718"N	8°0'17.719"E
CS12-18	Eidsborg	Quartzite	59°34'30.634"N	8°3'8.060"E
CS12-19	Røynstaul	Quartzite	59°34'55.42"N	8°7'2.384"E
CS12-20	Gjuve	Quartzite	59°26'53.87"N	8°22'11.747"E
CS12-22	Røynstaul	Quartzite	59°21'22.57"N	8°14'5.584"E
CS12-23	Morgedal	Quartzite	59°21'20.84"N	8°13'29.031"E
CS12-24	Eidsborg	Quartzite	59°21'19.015"N	8°12'11.382"E
CS12-25	Eidsborg	Quartzite	59°21'45.249"N	8°10'40.791"E
AA12-G-03	Gjuve	Metabasalt	59°34'48.592"N	8°5'31.481"E
AA12-04	Gjuve	Metabasalt	59°34'56.141"N	8°5'57.285"E
AA12-05	Morgedal	Metabasalt	59°34'55.043"N	8°6'54.365"E
AA12-07	Morgedal	Metabasalt	59°34'21.820"N	8°0'49.512"E
AA12-08	Morgedal	Metabasalt	59°34'24.203"N	8°1'31.312"E
AA12-09	Morgedal	Metabasalt	59°34'29.839"N	8°2'16.525"E
AA12-12	Gjuve	Metabasalt	59°27'1.861"N	8°1'35.349"E
AA12-13	Morgedal	Metabasalt	59°26'30.609"N	8°7'52.935"E
AA12-14	Gjuve	Metabasalt	59°24'51.041"N	8°15'53.027"E
AA12-15	Morgedal	Metabasalt	59°24'49.910"N	8°16'4.786"E
AA12-16	Gjuve	Metabasalt	59°24'49.357"N	8°15'58.392"E
AA12-19	Gjuve	Metabasalt	59°21'19.047"N	8°13'37.493"E
AA12-20	Gjuve	Metabasalt	59°21'23.999"N	8°11'56.639"E
AA12-21	Morgedal	Metabasalt	59°21'16.985"N	8°12'18.078"E

al., 2011). The Eidsborg Formation is a likely correlative with the Heddal Group to the northeast and Kalhovd Formation to the northwest (Bingen et al., 2003; Lamminen et al., 2011).

During the Sveconorwegian Orogeny, the Bandak succession was variably metamorphosed to greenschist facies. Brewer and Atkin (1987) identified three phases of Sveconorwegian metamorphism affecting these rocks: 1) greenschist facies regional metamorphism associated with the development of crenulation cleavage in mafic volcanic rocks; 2) localized contact metamorphism associated with the intrusion of post-kinematic granites; and 3) late stage veining. These workers also report geochemical data and note that rare earth elements display coherent patterns, implying that these elements have likely remained relatively immobile during metamorphism.

METHODS

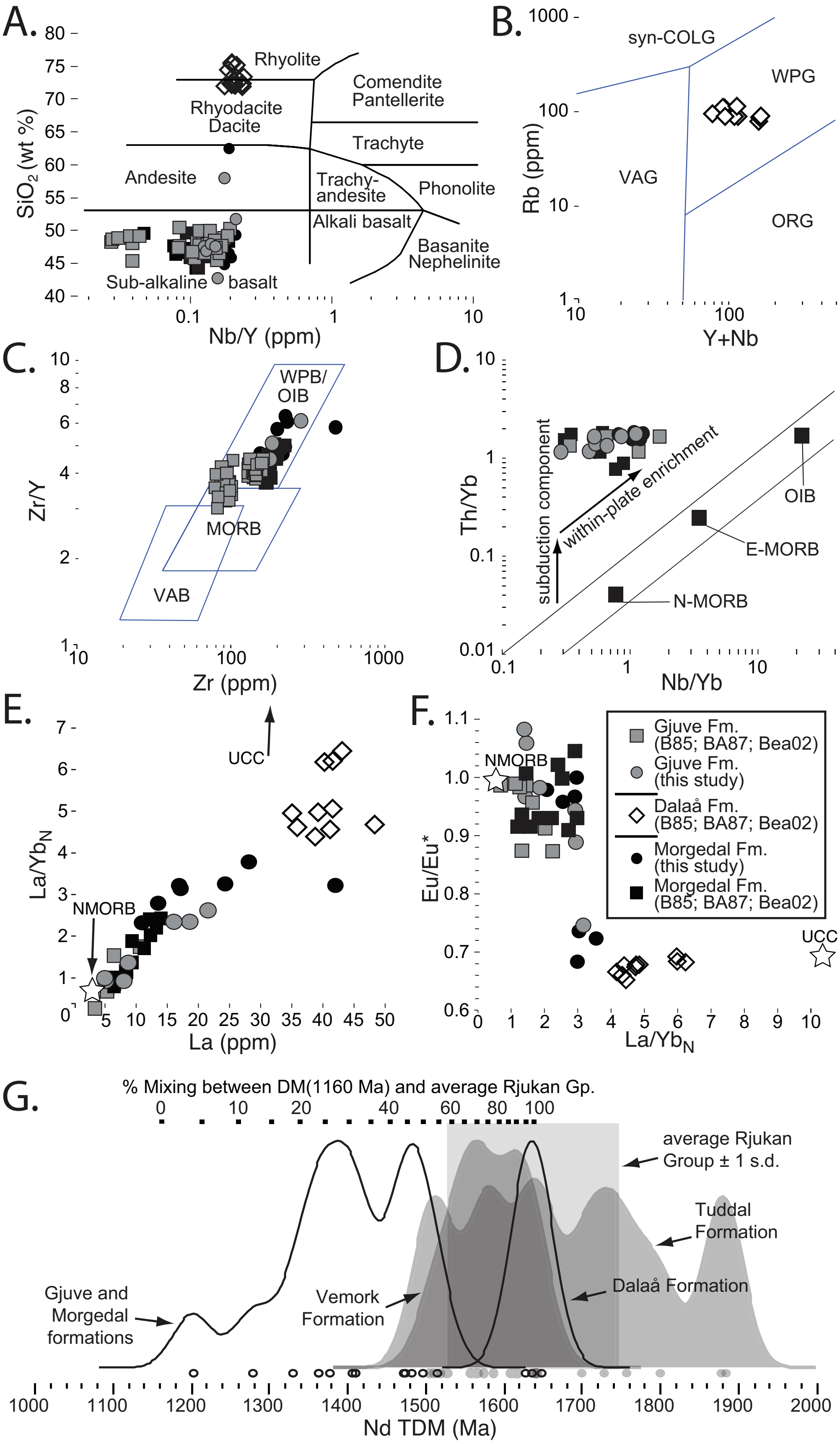
Whole-rock Geochemistry

Whole-rock major and trace element analyses were conducted on 20 samples from metabasaltic rocks within the Morgedal and Gjuve formations by X-ray flourescence (XRF) and (ICP-MS) at the University of St Andrews using a Spectro X-Lab XRF and a Thermo X Series II Quadrupole ICP-MS. See supplementary text (S1) for full methods.

Zircon U-Pb Geochronology and Hf, O Isotopic Analysis

Eight ~3 kg quartzite samples were collected from the Ofte, Røynstaul, Morgedal, Gjuve, and Eidsborg formations (samples CS12-17, -18, -19, -20, -22, -23, -24, -25; see Table S1 for sample locations and descriptions). U-Pb analyses were conducted using a Nu Instruments Attom single-collector inductively coupled plasma mass spectrometer (ICP-MS) and a New Wave Research UP193 solid-state laser ablation system. Near concordant (> 95 % concordance) U-Pb zircon ablation sites from samples CS12-17, -18, -23, -24, and -25 were then re-analyzed to measure their Lu-Hf isotopic compositions using a Thermo Scientific Neptune Plus MC-ICP-MS coupled to a New Wave Research UP193FX excimer laser ablation system at the NERC Isotope Geoscience Laboratories (NIGL). Prior to U-Pb and Hf analyses, samples CS12-17, -

Figure 3.3 (on opposite page): Whole-rock geochemical diagrams for bimodal volcanic lithologies within the Høydalsmo Group. Data are compiled from this study and Brewer et al. (2002) (Bea02), Brewer & Atkin (1987) (BA87), and Brewer (1985) (B85). Major element weight percentages are adjusted to an anhydrous basis. A) SiO2 (wt%) vs. Nb/Y (ppm) after Winchester and Floyd (1977); B) Y + Nb vs. Rb (ppm) after Pearce et al. (1984); VAG: volcanic arc granite, ORG: ocean-ridge granite, WPG: within-plate granite, syn-COLG: syn-collisional granite; C) Zr vs. Zr/Y (ppm) after Pearce and Norry (1979); VAB: volcanic arc basalt, MORB: mid-ocean ridge basalt, WPB/OIB: within-plate basalt/ocean island basalt; D) Nb/Yb vs. Th/Yb (ppm) after Pearce et al. (1995); N-MORB: normal mid-ocean ridge basalt, E-MORB: enriched mid-ocean ridge basalt, OIB: ocean island basalt; E) La (ppm) vs. La/YbN; F)



23, -24, and -25 were analyzed for O isotopes using a Cameca IMS-1270 ion microprobe at the Edinburgh Ion Microprobe Facility (EIMF), University of Edinburgh. See supplementary text (S1) for complete methods.

RESULTS

Whole-rock Geochemistry

Brewer et al. (2002) reported whole-rock geochemical data on mafic and felsic rocks of the Bandak succession and these data are compiled with the results from this study (Fig. 4.3.; Table S2). Major element data are adjusted to an anhydrous basis by normalization to the loss on ignition values. The SiO2 contents of these rocks range from 42.7 to 73.5 wt. %. The meta-basaltic samples contain 42.7-52.0 wt. % SiO2, whereas the meta-dacites and rhyolites contain 71.8-73.5 wt. % SiO2, highlighting the bimodal composition of this suite apart from two intermediate samples (Figs 3A, 3B). The mafic rocks have moderate TiO2 values (1.3-3.9 wt.%) and Al2O3 (13-17.2 wt. %), elevated Mg numbers (Mg#, 0.25-0.49), high rare earth element (REE) concentrations (51-295 ppm), minor light REE enrichment (La/Ybn, 1.3-3.5), and high ferromagnesian trace element contents (Co, 48-94 ppm; Cr, 93-168 ppm; Ni, 18-181 ppm; 108 ppm average). Samples lack a strong Eu anomaly and in some case have a positive Eu anamoly (Eu/Eu*, 0.6-1.1) and exhibit a strong depletion in Nb relative to La (Nb/LaN: 0.3-0.6) (Fig. 4.3.H). All mafic samples are also enriched in other highly incompatible mobile elements (Rb, Ba, Th, U).

The felsic samples of the Dalaå Formation reported by Brewer et al. (2002) have moderate concentrations of large ion lithophile elements (LILEs) (Ba, 751-1054 ppm; Sr, 86-157 ppm), and enrichment of light REEs. Total REE abundances vary from 218 to 297, with slight enrichment in light REEs and highly refracted heavy REEs (Ce/Ybn = 4.0-5.8; Gd/Ndn = 0.42-0.49), as well as strongly negative Eu anomalies (Eu/Eu*, 0.7-0.78).

U-Pb Geochronology

Results and instrumentation parameters of U-Pb geochronology are presented in Figures 4 to 9 and digital supplements 7 and 8. Samples were collected along two transects through the supracrustal rocks from the towns of Åmot to Øyfjell (Groven transect) and Vrådal to Vråliosen (Vrådal transect) (see Figure 2). Along the Groven transect, samples were collected from the Ofte, Røynstaul, and Eidsborg formations. Along the Vrådal transect, samples were collected from the Røynstaul, Morgedal, and

Eidsborg formations. An additional sample from the Gjuve Formation was collected from a road cut along E134.

Ofte Formation

Zircons from sample CS12-17 are mainly colorless to ochre with moderate degrees of rounding and range in size from 80-300 μm (Fig. 4.4). This sample shows a dominant age population at 1550 Ma with subordinate populations at 1210 Ma and 2080 Ma (207Pb/206Pb age) (Figs. 5 and 6). Although only 42 of the 68 analyses were < 5 % discordant, all analyses have the same age distributions as the concordant subset.

Røynstaul Formation

Zircons from sample CS12-22 are euhedral to well-rounded, range from brown to pale orange in color, and are 30-300 μm in size (Fig. 4.4). Sample CS12-19 has a zircon age distribution composed of one dominant population at 1500 Ma together with three subordinate peaks at 1175, 1350, and 1830 Ma and a single concordant 2694 Ma age (Figs. 5 and 6). The majority of the analyses are discordant (62/84 are > 5 %

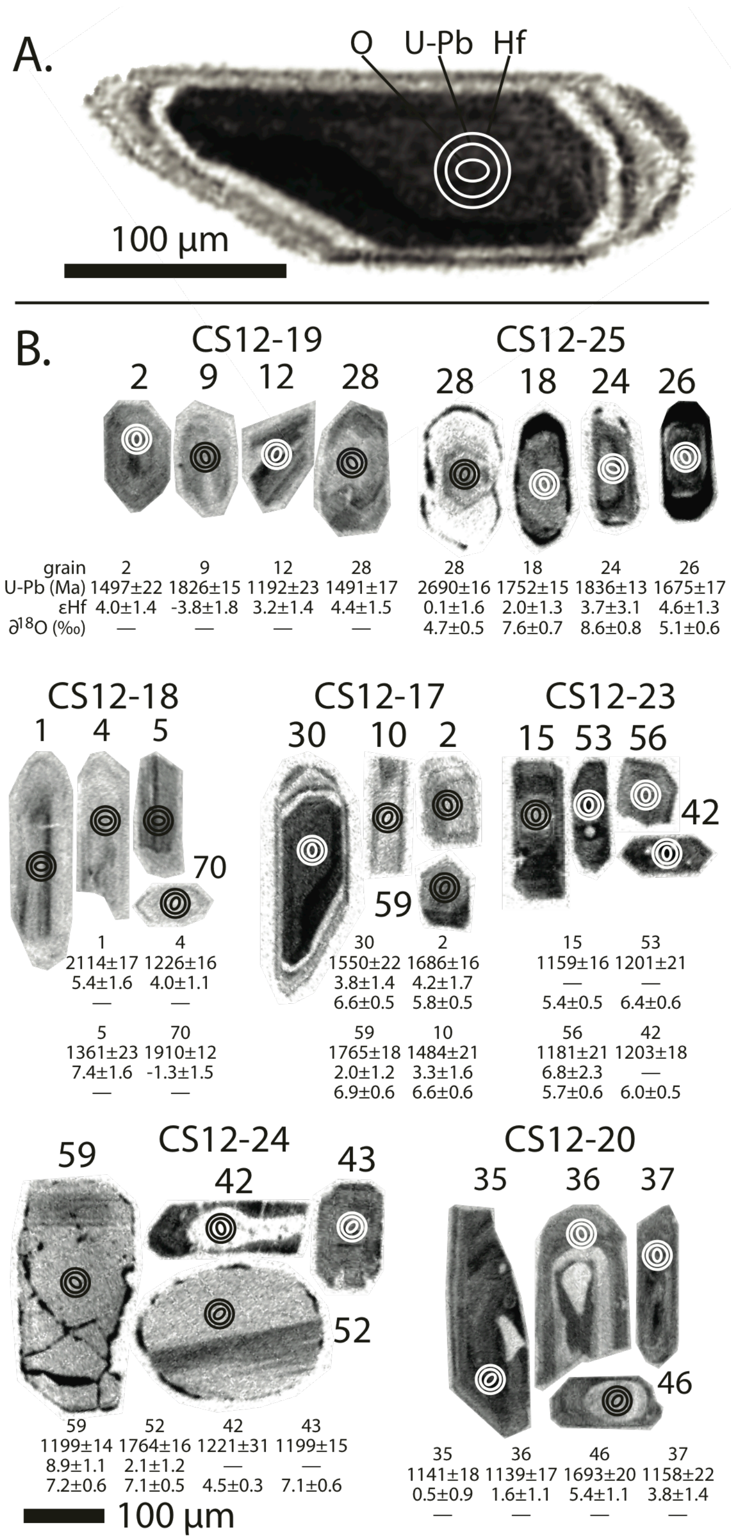


Figure 4.3: A) Cathode luminescence (CL) image of zircon CS12-17-30 with outline of typical O (8x15 µm), U-Pb (25 µm), and Hf (35 µm) analytical spots. B) Typical zircon CL images with analytical spots and associated values from each detrital zircon sample in this study.

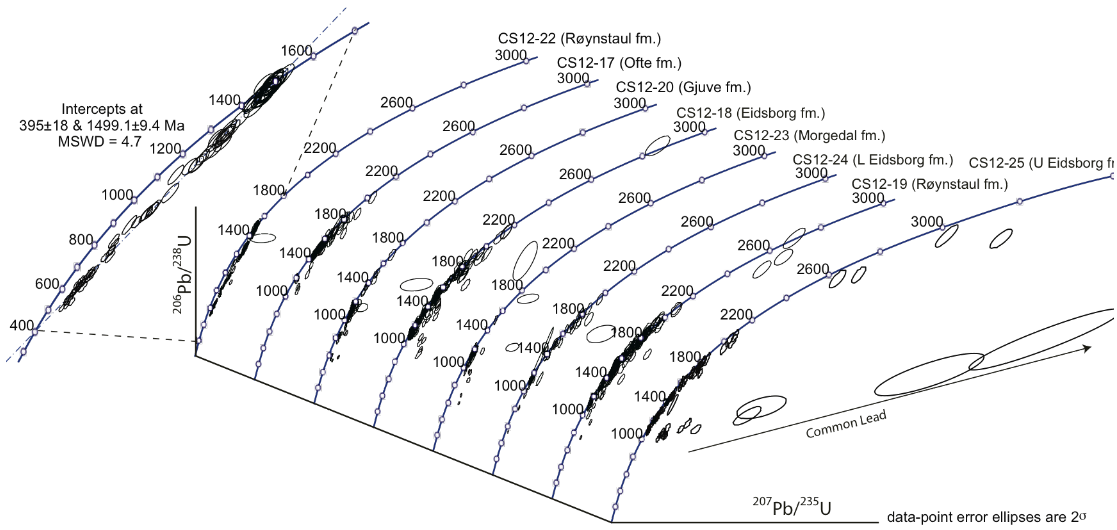


Figure 4.4: Pb/U concordia diagram of ages (Ma) of zircon grains from each sample. Uncertainties are shown at the 2σ level. Diagram was constructed with the use of Isoplot (Ludwig, 2008).

discordant) but the same dominant peak, 1500 Ma, marks both the entire sample and its concordant subset. U concentrations of zircons in CS12-22 range from 320 ppm to 8070 ppm (2630 ppm average) and 24 ppm to 1235 ppm (260 ppm average) in CS12-19) and discordance is positively correlated with U content.

Morgedal Formation

Zircons from sample CS12-23 are mainly colorless with moderate degrees of rounding and sphericity and range in size from 40-300 μm (Fig. 4.4). U-Pb analyses from this sample have a concordant age distribution with a single major population at 1200 Ma, and subordinate populations of 1130 and 1170 Ma with a single 1.5 Ga age (Figs. 5 and 6). In this sample only 29 of the 55 analyses were < 5 % discordant, and older ages were indicated by several discordant analyses.

Gjuve Formation

Zircons from sample CS12-20 are euhedral and range from colorless to yellow and are 60-250 μm in size (Fig. 4.4). Zircon age distribution within this sample show one dominant population at 1155 Ma and several older Proterozoic ages (Figs. 5 and 6). There is also little difference between all of the analyses (n = 134) and a concordant subset (< 5 % discordant; n = 63).

Eidsborg Formation

Zircons in each of the three samples collected from the Eidsborg Formation are colorless to ochre in color, range from euhedral to well-rounded with several angular fragments, and are 30-300 μm in size (Fig. 4.4). The concordant (< 5 % discordant) age distribution from the Eidsborg Formation along the Vrådal transect has one dominant age peak at 1180 Ma and several scattered Proterozoic ages (Figs. 5 and 6). The Eidsborg Formation has a similar dominant concordant age peak at 1160 Ma with several additional smaller peaks at 1500, 1620, and 1830 Ma and two concordant Archean ages. Similar to the upper Eidsborg Formation from the Vrådal transect, the Eidsborg Formation from the Groven transect hosts a major peak at 1150 Ma with subordinate peaks at 1340, 1520, 1680, and 1780 Ma, and four ages older than 2.0 Ga. Discordant populations (> 5 % discordant) from the three samples exhibit similar distributions.

Zircon Hf and O Isotopes

Within the eight samples, there are three discrete pre-1250 Ma populations that have a similar range of εHf values (1250 to 1450 Ma: εHf (average ± 2σ) = 2.7 ± 10.0; 1450 to 1600 Ma: εHf = 3.5 ± 7; 1600 to 1950 Ma: εHf = 0.4 ± 11.4). Analyses with $^{207}Pb/^{206}Pb$ ages younger than 1250 Ma have εHf values that fall into two distinct fields. Samples collected north of Lake Bandak (CS12-17, -18, -19, -20) are more enriched in radiogenic Hf (εHf = 2.8 ± 4), whereas those samples ~25 km south of Lake Bandak

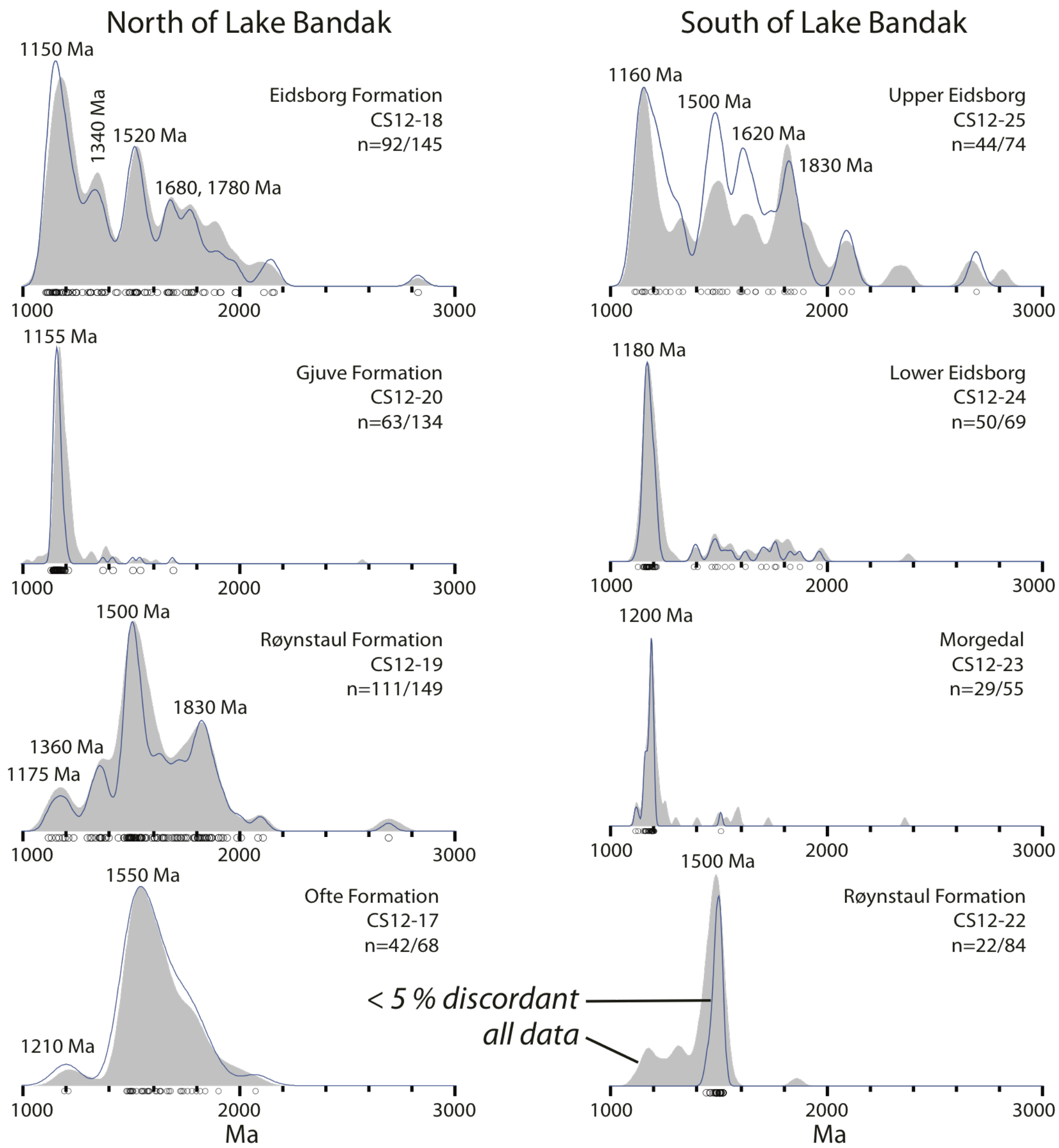


Figure 4.5: Kernel density estimation (solid line) plots of detrital zircon ages from each sample. Only ages that < 5 % discordant are used. The grey filled-line represent all analyses regardless of discordance. Plot is constructed using densityplotter (Vermeesch, 2012).

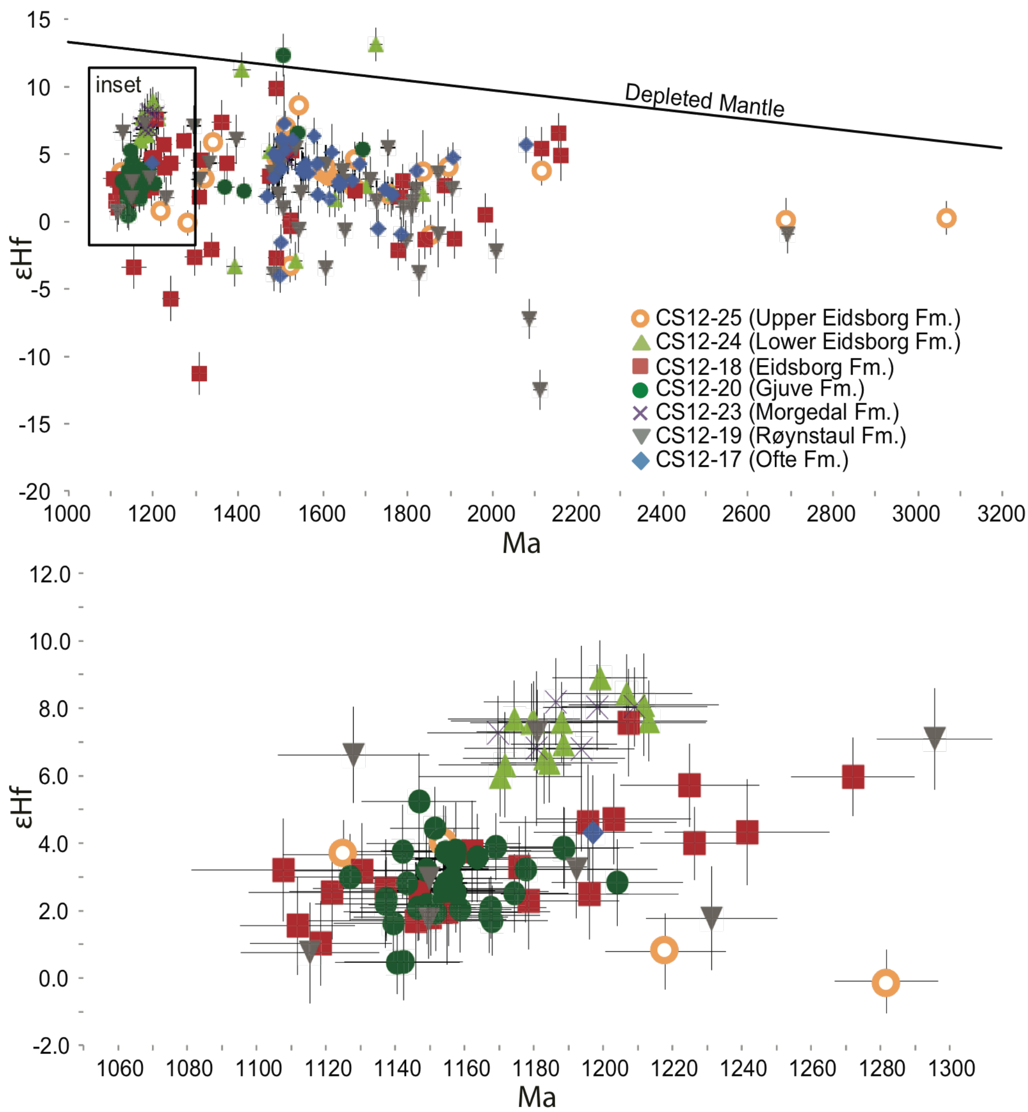


Figure 4.6: εHf(t) vs. U-Pb analyses of detrital zircons from the Bandak succession. Uncertainties are displayed as 2σ. DM = depleted mantle.

(CS12-23 and -24) are more depleted in radiogenic Hf (εHf = 7.4 ± 1.6) (Fig. 4.7). Zircons from a subset of four samples (CS12-17, -23, -24, -25) were analyzed for $\partial^{18}O$ (Fig. 4.8). Accepted analyses have $\partial^{18}O$ values that range between 12.2 and 4.0 ‰. Analyses with U-Pb ages displaying > 5 % discordant were rejected as Valley et al. (2003) demonstrated a significant shift in $\partial^{18}O$ values with increasing discordance. Each of the samples display a general decrease in $\partial^{18}O$ values in zircons from ~2.0 Ga to 1.1 Ga. The spread of $\partial^{18}O$ values within the 1.25-1.1 Ga age peak form a vertical

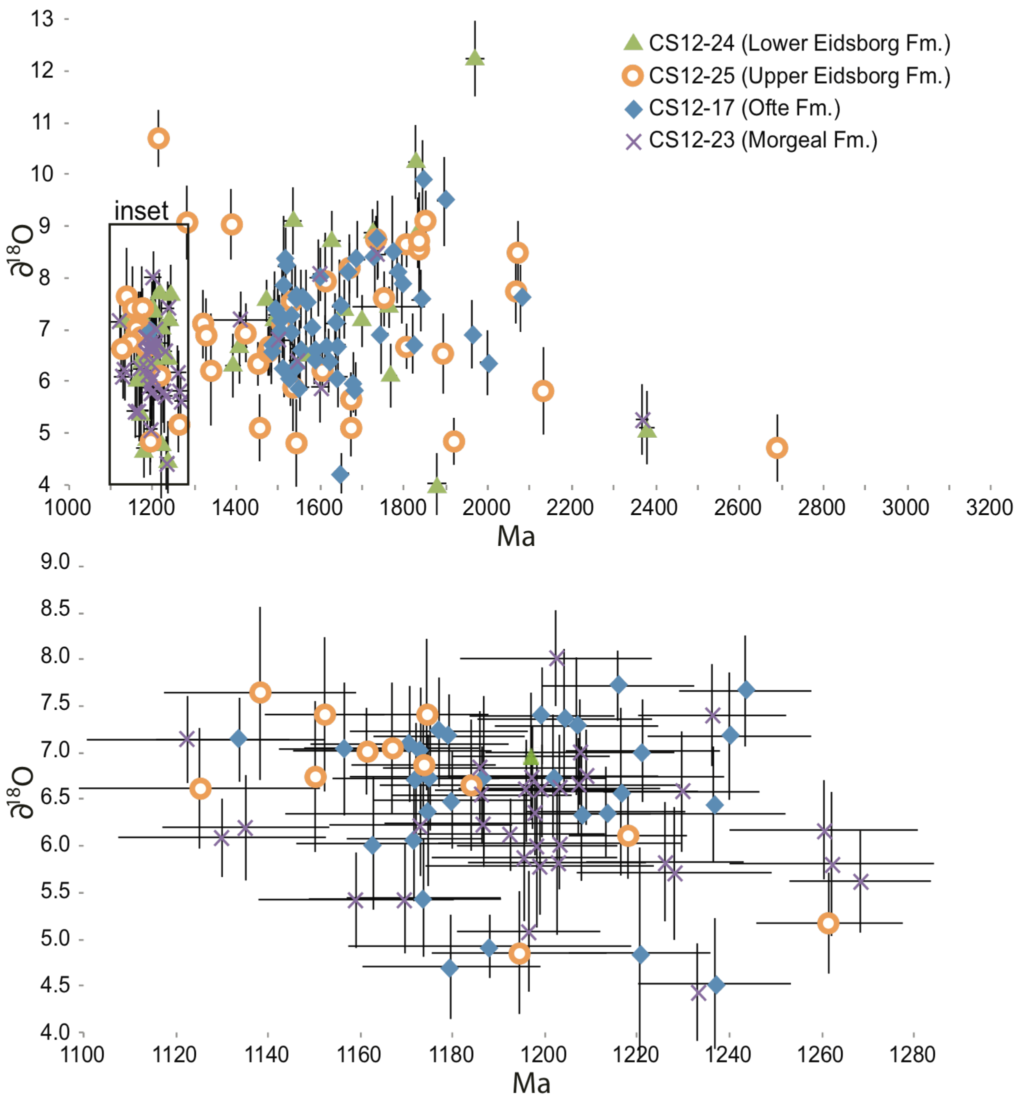


Figure 4.7: $\partial^{18}O$ (‰ VSMOW) vs. U-Pb analyses of detrital zircons from the Bandak succession. Uncertainties are displayed as 2σ.

array between 8.0 and 4.7 (average = 6.56 ± 1.8 ‰, 2σ).

DISCUSSION

Petrogenesis of Volcanic Rocks in the Morgedal and Gjuve formations

The Telemark supracrustal succession has been metamorphosed to greenschist-facies and thus the primary geochemical compositions are liable to subsequent mobilization. Large ion lithophile elements (e.g. Rb, Ba, K, Sr) are generally considered mobile under metamorphic conditions whereas rare earth elements and high field strength elements (e.g. Th, Nb, Ti, Zr, Y) are considered the least mobile or immobile

(Rollinson, 1993). Given these issues, only those elements generally considered immobile are used in the geochemical diagrams of Figure 3.

The bimodal volcanic rocks of the Morgedal, Dalaå, and Gjuve formations (Figs. 3A) are classified as within-plate basalts and dacites/rhyolites (Figs. 3B, 3C; Pearce and Norry, 1979). The basaltic rocks of the Bandak succession have elevated Th/Yb ratios implying derivation from a mantle source that has been previously enriched through subduction processes (Fig. 4.3.D). Light REE enrichment (e.g. La/Yb) and negative Eu anomalies (Fig. 4.3.E) further imply some degree of crustal assimilation between this enriched mantle-derived material and basement rocks. The felsic Dalaå Formation rhyolite has a Nd isotopic signature (εNd = 0.2; Brewer et al., 2002) that indicates it was derived from crustal anatexis of the underlying Rjukan Group, or at least basement of similar age, rather than a mantle origin (Fig. 4.3.G). The Nd isotopic signatures also show that the basalt of the Morgedal and Gjuve formations was sourced from depleted mantle with varying degrees of contamination derived either from the continental basement and/or an enriched mantle.

Depositional Ages and Provenance of the Bandak succession

Maximum depositional ages for each of the samples were calculated using the youngest, least discordant analyses from each sample (an exception is sample CS12-22 of the Røynstaul Formation - Vrådal transect, which did not have any 'young', i.e. zircons with ages < 1200 Ma). The Ljosdalsvatnet rhyolite lava flow was emplaced at 1155 ± 3 Ma thus further constraining the maximum depositional age of the formation (Laajoki et al., 2002) and directly underlies the Ofte Formation; this provides a maximum depositional age for that Formation, which is in broad agreement with the

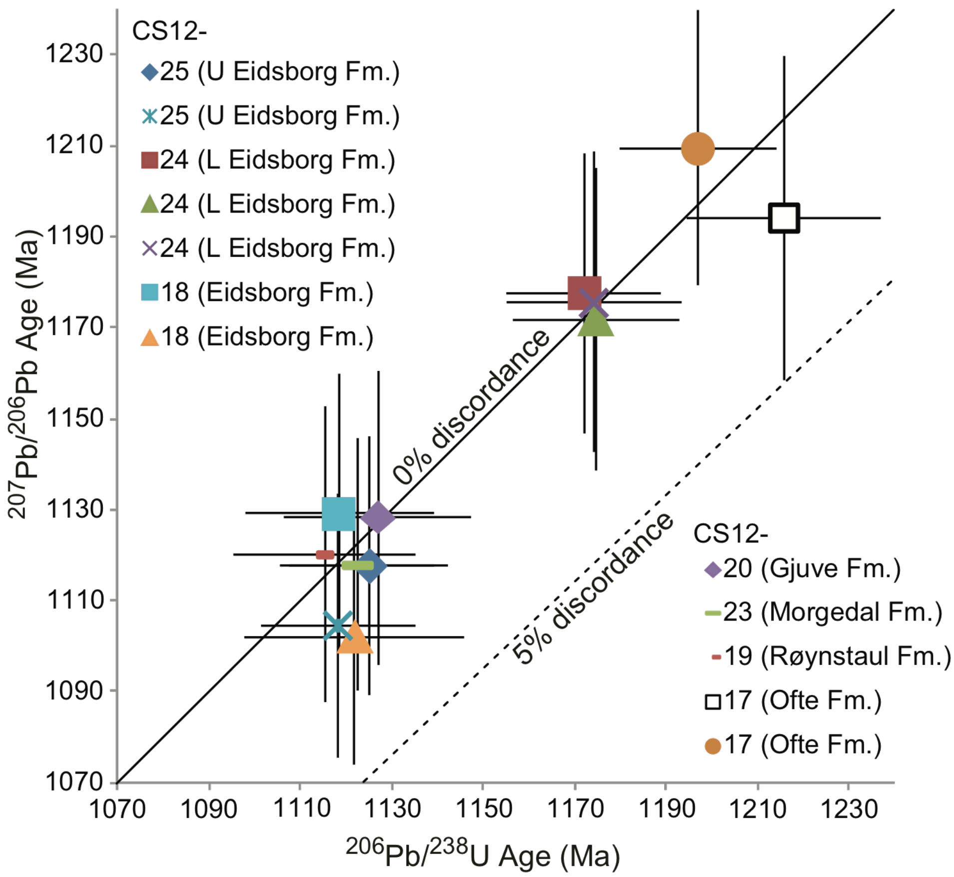


Figure 4.8: Plot of 206Pb/238Pb vs. 207Pb/206Pb ages (Ma) youngest, least discordant zircon analyses from each sample to assess the maximum depositional age.

two youngest detrital zircon ages of 1197 ± 17 Ma (these are 1.0 % discordant; Fig. 4.9) Based on our detrital zircon data, the maximum depositional ages for the Morgedal, Gjuve and Eidsborg formations ranges from 1127 ± 21 Ma to 1118 ± 17 Ma. This implies that deposition of the Bandak succession occurred over a short interval of time. Combining the age of the Ljosdalsvatnet and that the duration of the the maximum depositional ages of the Høydalsmo Group and Eidsborg Formation, then the sub-Røynstaul unconformity represents a hiatus of at most ~35 Ma. Further, our results show that the oft-cited maximum depositional age of 1118 ± 38 Ma (from de Haas et al., 1999), which is based on a discordant analysis (207Pb/206Pb age = 1118 ± 38 Ma and 206Pb/238U age = 1154 ± 42, ~3 % discordant), should not be used as lead loss cannot be precluded.

The minimum depositional age of the Bandak succession is defined by the intrusive relationship of the post-tectonic granitoids found throughout the region. Within the vicinity of this study, those bodies include the Vrådal (964 ± 18 Ma; Anderson et al., 2007), Bessefjell (940 ± 19 Ma; Anderson et al., 2002), and Vehuskjerringa plutons (932 ± 2 Ma; Andersen et al., 2007a), which together provide a minimum age of around 950 Ma.

Detrital Zircon Age Spectra Results

To illustrate the interrelated character of the detrital zircon age spectra, multi-dimensional scaling is employed to visualize the pairwise "dissimilarities" of these age distributions (as discussed by Vermeesch, 2013) (Fig. 4.10). When comparing several age spectra, it often becomes difficult to visualize their relatedness objectively. Furthermore, it is equally difficult to utilize numerical statistics to obtain a sense of how similar a single age spectrum is to a group of other samples. Multi-dimensional scaling overcomes these issues while maintaining statistical objectivity. The two statistical tests employed to measure the statistical dissimilarity are the Kolmogorov-Smirnov test and Cramér-von Mises criterion. The Kologorov-Smirnov statistic is quantified as the maximum distance between the cumulative distribution function of two samples, whereas the Cramér-von Mises criterion measures the area between the cumulative distribution function of two samples. These statistics are calculated for each pair of samples and are plotted in multi-dimensional space (see Vermeesch, 2013). In Figure 8, the Kolmogorov–Smirnov test and Cramér-von Mises criterion maps show three statistically significant groups of age spectra corresponding to unimodal distributions dominated by Sveconorwegian zircons (CS12-20, -23, -24), i.e. multimodal distributions dominated either by Sveconorwegian (CS12-17, -19) or ~1.5 Ga zircons (CS12-18, -25).

The 1550-1500 Ma age peak in the Ofte and Røynstaul formations is possibly related to the 1512-1502 Ma volcanic rocks of the Rjukan Group and associated intrusives (Dahlgren et al., 2005), as they are found throughout the region (see also Lamminen et al., 2011). The greater spread of detrital zircon ages may be due to local differences in the age of the Rjukan Group, or may reflect sourcing from further afield as the rest of the Telemarkian basement has an age spread of ~1.55-1.48 Ga (Bingen et al., 2005; Roberts et al., 2013). The only nearby potential source for the ~1360 Ma age peak is the Sandvik diabase (Corfu and Laajoki, 2008; 1347 ± 4 Ma). Although the age of this body indicates nearby activity of similar age, its small subaerial footprint and composition make it unlikely to be the actual source. Other potential correlatives in the Sveconorwegian province are the Kungsbacka granite suite (~1.34-1.30 Ga; Austin Hedgardt et al., 2007) in the Eastern Segment block of southern Sweden (Andersen, 2005). Thus, either the provenance of the Ofte and Røynstaul units is distant (> 300 km), or the ~1.35 Ga source rocks have been removed by tectonic processes or they are yet to be exposed or discovered. Additionally, the Røynstaul Formation from the Groven transect has a significant proportion of ~1850 to 1650 Ma zircons that are presumably derived from the Transcandinavian Igneous Belt (~1.85-1.66 Ga; Bingen and Solli, 2009).

Above the Røynstaul Formation, the Morgedal, Gjuve, and lower Eidsborg rocks are dominated by nearly unimodal age distributions between ~1200 Ma and 1155 Ma. Although there are several large A-type granitic bodies within 100 km from the locality of this study (see Bingen et al., 2003), the unimodal age spectra and narrow basin geometries (Lamminen et al., 2011) imply these zircons were derived from nearby sources, likely from the nearby felsic rocks associated with the Dalaåi (1150 ± 4 Ma), Ljosdalvatnet (1155 ± 3 Ma), Brunkeberg (1155 ± 3 Ma), and Skogsaa (1145 ± 4 Ma) porphyries (Laajoki et al., 2002). Although these volcanic rocks provide a potential source for the youngest detrital zircons in the Bandak succession, it is important to note the 1180 Ma age peak seen in the Eidsborg Formation is enigmatic.

The Eidsborg Formation (samples CS12-18, -25) has a diverse array of zircon ages. The provenance likely included similar sources to the underlying units, which are dominated by ~1150 Ma, likely attributed to early Sveconorwegian magmatism. The ~1340 Ma age peak is also present along with older age peaks at 1500-1520 Ma, 1620-1680 Ma, and 1780-1830 Ma, reflecting Telemarkian, Gothian and Transcandinavian Igneous Belt sources, respectively (Bingen & Solli, 2009).

The transition from the multimodal to unimodal and back to multimodal age distributions within the Bandak succession is interpreted as a significant provenance shift reflecting evolution of the basin and its distributary province. The multimodal patterns within the Ofte and Røynstaul formations are evidence that during early Bandak sedimentation, extensional tectonism did not disrupt significantly drainage patterns. Following this, the unimodal pattern signifies the establishment of individual depocentres in discreet extensional basins. Associated with the tectonic isolation of drainage system, the significant thinning of the crust allowed for the eruption of large volumes of bimodal magmatism (Brewer et al., 2002). As extension and volcanism decreased, detritus again began to be derived from a broad spectrum of sources recreating the multimodal age distributions seen in the uppermost

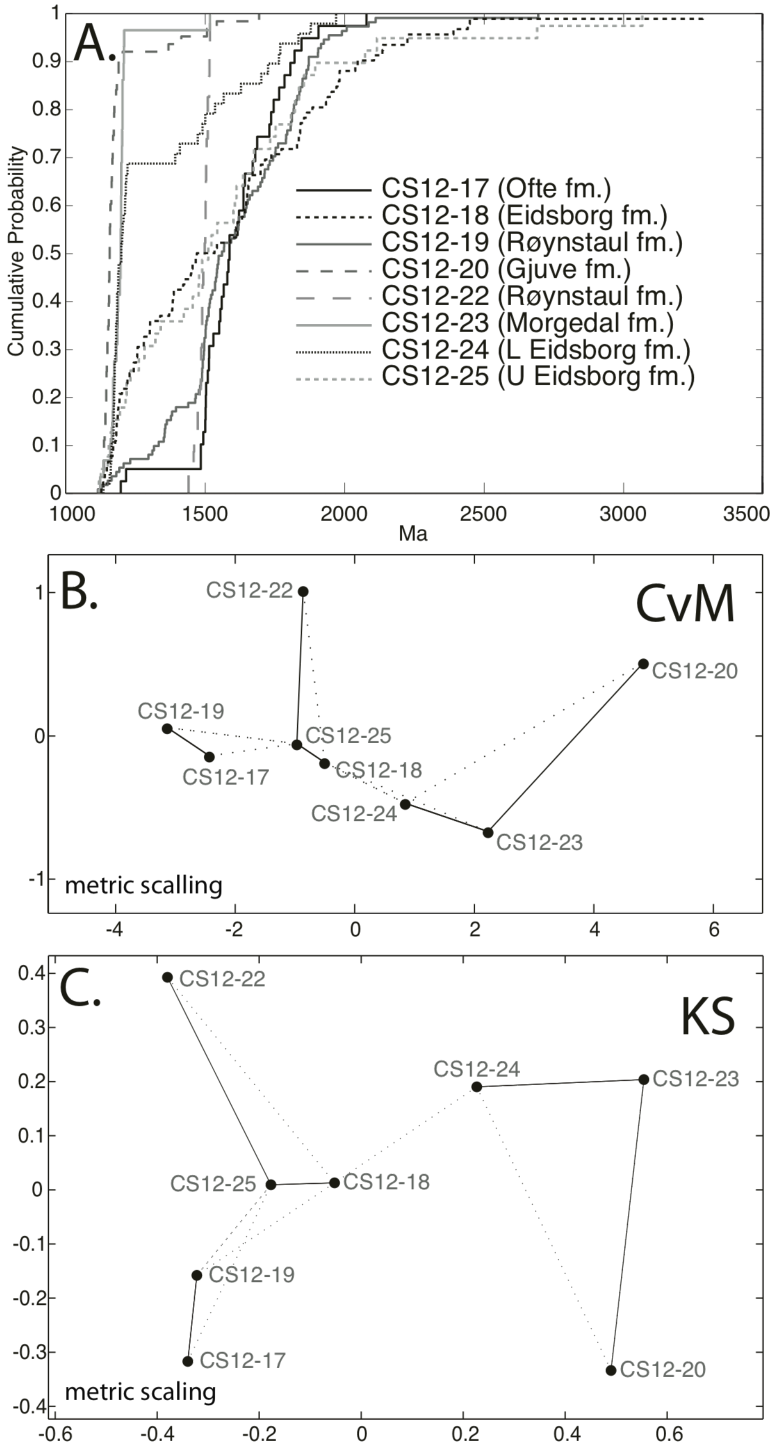


Figure 4.9: A) Cumulative distribution functions of detrital zircon distributions for samples from this study constructed with Matlab; B) Metric multi-dimensional scaling plots of the Bandak succession samples using the Cramér-von Mises criterion as a dissimilarity measure and C) using the Kolmogorov–Smirnov test. Solid Lines mark the closest neighbours and dashed line the second closest neighbours (constructed using the MuDiSc program in Matlab; Vermeesch, 2013).

portion of the Bandak succession (Eidsborg Formation).
Zircon Hf isotopes also discriminate between various source regions. The 1.1 to 1.25 Ma detrital zircons fall into two fields in U-Pb/Hf space (Fig. 4.7). The samples from along Lake Vrådal are more depleted in radiogenic Hf (εHf = 7.4 ± 0.8), whereas those from north of Lake Bandak are more enriched in radiogenic Hf (εHf = 2.8 ± 2) (Fig. 4.7). This implies that: (i) these two depocentres were receiving similar age detritus but derived from different crustal sources via discrete drainage systems (see also Lamminen et al., 2011); and (ii) the average Hf isotopic composition of the Lake Vrådal region are more depleted than those north of Lake Bandak. However, the wide spread in published zircon Hf values from the Telemark region do not provide the resolution necessary to identify specific sources for the detrital zircons in this study (see Andersen et al., 2002; Andersen et al., 2007; Andersen et al., 2009; Pedersen et al., 2009; Lamminen and Köykkä, 2010). Further, oxygen isotopes in the Sveconorwegian-age zircons analyzed show that the host magmas assimilated an appreciable amount of supracrustal material driving their compositional trends to higher $\partial^{18}O$ values (Fig. 4.8).

Implications for Tectonic Models

Several distinct phases of Mesoproterozoic intra-continental extension and associated bimodal volcanism are present in southern Norway:, for example, the ~1.26-1.21 Ga Saesvatn-Valldal Group (Bingen et al., 2002; Brewer et al., 2004), ~1.23 Ga Grøssæ-Totak belt (Sigmond, 1978; Roberts et al., 2011), < 1.12 Ga Ofte, Morgedal, and Gjuve units (Brewer et al., 2002; Laajoki et al., 2002; Bingen et al., 2003, herein), and the <1.22 Ga Byglandsfjorden supracrustals (Pedersen et al., 2008) in the poorly known Setesdalen region. In the Telemark region, exposure of normal faults associated with regional extension are generally limited, although individual basins are characterized by thick metaconglomerates that imply high relief, possibly associated with fault-bounded depositional basins (Lamminen et al., 2011).
The degree of crustal extension needed to accommodate the supracrustal belts within Telemarkia (~3-4 km thick; see Brewer et al., 2002) imply crustal thickening occurred prior to deposition of the Bandak succession. A series of granulite-facies rocks with peak metamorphic ages between 1145 and 1127 Ma are found in the Bamble terrane structurally above the Telemark crustal block (Cosca et al., 1998; Bingen et al., 2008b). It is plausible that this granulite metamorphism immediately preceding the deposition

of the Bandak succession (<1.16 Ga) was associated with the required crustal thickening, and that it was followed by localized orogenic collapse and formation of the intermontane basins (Fig. 4.11). The presence of angular unconformities beneath the Røynstaul and Eidsborg formations are thought to represent episodes of basin inversion followed by subsidence and further sediment accumulation (Laajoki and Corfu, 2007; Lamminen et al., 2011); however, the presence of angular unconformities can also be explained from intra-basinal fault block rotation (e.g. Zhongquan et al., 2004; Hogan et al., 2011). Nevertheless, the evolution of similarly evolving volcanosedimentary basins with a range of ages (i.e. <1.27 Ga Saesvatn-Valldal, <1.24 Ga Grøsse-Totak, <1.22 Ga Byglandsfjorden, <1.16 Ga Bandak (Brewer et al., 2004; Roberts et al., 2011; Pedersen et al., 2008), suggests a prolonged period of crustal extension and basin formation.
The eruption and deposition of the volcanic and sedimentary rocks associated with the 1.26-1.16 Ga episode of intracontinental extension in southern Norway has been linked to a long-lived process involving mafic underplating, crustal melting, and formation of extensional basins inboard of an active convergent margin (Figure 11; Brewer, et al., 2004; Roberts et al., 2011). This is consistent with geodynamic models that join the

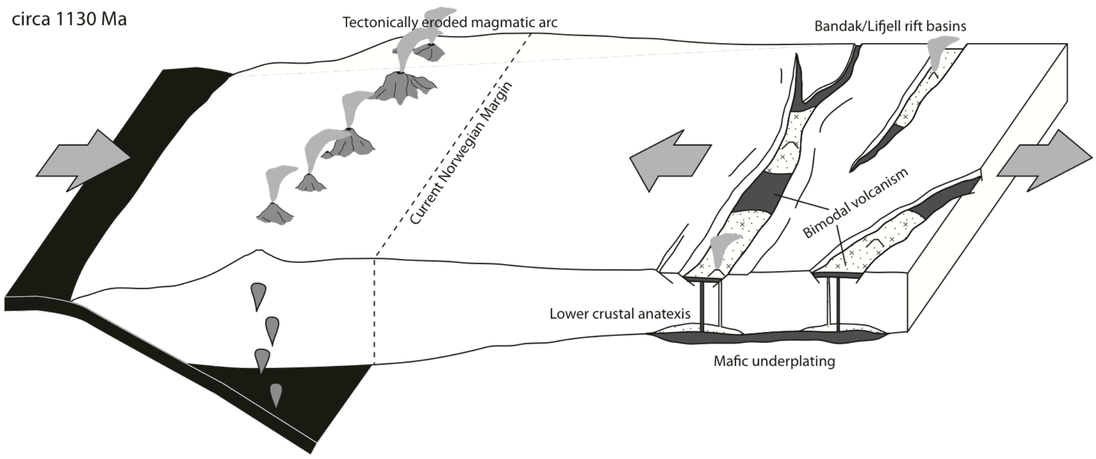


Figure 4.10: Schematic model for the proposed ~1.2-1.1 Ga geodynamic setting in the Telemark block. The mafic magmatism (Morgedal and Gjuve formations) is sourced from a mantle wedge enriched via subduction metasomatism. The mafic underplating associated with this magmatism causes low-crustal anatexis leading to the emplacement of the felsic volcanic Dalaåi Formation. The contemporaneous subduction zone and accompanying magmatism west of the intercontinental extension is assumed to have been tectonically eroded during the subsequent orogenic episodes.

leading margins of Fennoscandia, Laurentia, and Amazonia as part of a long-lived (>

600 Ma) retreating accretionary margin (Zhao et al., 2004; Whitmeyer and Karlstrom, 2007; Johansson, 2009; Condie, 2013; Roberts et al., 2013). Although in Fennoscandia 1.3-1.1 Ga continental arc material is not preserved, it is likely much of the hinterland of this orogenic episode was removed by subduction erosion or tectonic translation during the subsequent accretionary and/or collisional margin (Roberts et al., 2011). The Bandak succession represents the last recorded stage of this behind-arc continental extension, and is a pre-Sveconorwegian feature that can be related to convergent-margin processes.

CONCLUSION

From the data presented in this study, I propose that:

1) At the base of the Bandak succession, the deposition of the Ofte Formation is constrained by the intrusion of the Ljosdalsvatnet porphyry at 1155 ± 3. The Eidsborg Formation at the top has a maximum depositional age of 1118 ± 17 Ma;

2) The provenance of the Bandak succession in Telemark is characterized by three phases of depositions. The Ofte and Røynstaul formations were derived from distal sources bringing in a wide range of detrital zircon ages. The overlying Mordegal, Dalaåi, and Gjuve formations are dominated by bimodal volcanic rock with intercalations of sedimentary rocks with unimodal locally derived detritus and spatially linked to proximal bedrock marking the initiation of widespread extension. Lastly, the Eidsborg Formation signals the end of extension and deposition of sediments derived from further afield.

3) Hf and O isotopes in zircon further subdivide the region of provenance for these units as having more enriched Hf and crustal O signatures north of Lake Bandak and depleted Hf and crustal O signatures to the along Lake Vrådal;

4) The basalt flows within the Morgedal and Gjuve formations were derived from a metasomatized mantle likely above a subducting slab with decreasing crustal contamination upsection;

5) These data are consistent with crustal thickening and medium-pressure granulite formation prior to 1.12 Ga followed shortly thereafter by orogenic collapse and the formation of the intermontane basins accommodating the deposition of the Bandak succession.

ACKNOWLEDGEMENTS

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Chapter 5 Generation and Preservation of Continental Crust through the Grenville Orogenic Cycle

Abstract

Detrital zircons from modern sediments display an episodic temporal distribution of U-Pb crystallization ages forming a series of 'peaks' and 'troughs'. In most interpretations the global compilations of detrital zircon age peaks represent either periods of enhanced generation of granitic magma perhaps associated with mantle overturn and superplume events or preferential preservation of continental crust during global collisional orogenesis. The close association of those peaks with the assembly of supercontinents implies a causal relationship between collisional orogenesis and the presence of zircon age peaks. Here these two end-member models (episodic periodicity of increased magmatism versus selective preservation during collisional orogenesis) are assessed using U-Pb, Hf, and O analysis of detrital zircons from sedimentary successions deposited during the ~1.3-1.1 Ga accretionary, ~1.1-0.9 Ga collisional, and < 0.9 Ga extensional collapse phases of the Grenville orogenic cycle in Labrador and Scotland. The pre-collisional, accretionary stage provides a baseline of continental crust present prior to orogenesis and is dominated by Archean and Paleoproterozoic age peaks associated with pre-1300 Ma Laurentian geology. Strata deposited during the Grenville Orogeny display similar Archean and Paleoproterozoic detrital populations along with a series of broad muted peaks from ~1500 to 1100 Ma. However, post-collisional sedimentary successions display a dominant age peak between 1085 and 985 Ma, similar to that observed in modern North American river sediments.

Zircons within the post-orogenic sedimentary successions have progressively lower εHf and higher ∂^{18}O values post-1.8 Ga until ~1.2 Ga whereupon they have higher εHf and ∂^{18}O within the dominant 1085-985 Ma age peak. Furthermore, the Lu-Hf isotopic profile of the Grenville-related age peak is consistent with significant assimilation and contamination of older crustal material. The timing of this dominant age peak coincides with the peak of metamorphism and magmatism associated with the Grenville Orogeny, which is typical of a collisional orogenic belt.

The change from broad muted age peaks in the syn-orogenic strata to a single peak in the post-orogenic sedimentary successions and the modern river sediments implies a significant shift in provenance following continental collision. This temporal change in provenance highlights that the host rock, from which detrital zircons within syn-orogenic strata were derived, was no longer available as a source during the later stages of the accretionary and collisional stages of the orogenic cycle. This may reflect either its tectonic burial or possibly its removal by subduction erosion. During continental collision, the incorporated continental crust is isolated from crustal recycling processes operative at subduction margins. This tectonic isolation combined with sedimentary recycling likely controls the presence of the isotopic signature associated with the Grenville Orogeny in the modern Mississippi and Appalachian river sediments. These results imply that zircon age peaks, which developed in conjunction with supercontinents, are the product of selective crustal preservation during collisional orogenesis.

Introduction

Continental crust is a key repository of Earth history, preserving the product of geological processes that have shaped the planet in deep time. This record though, is

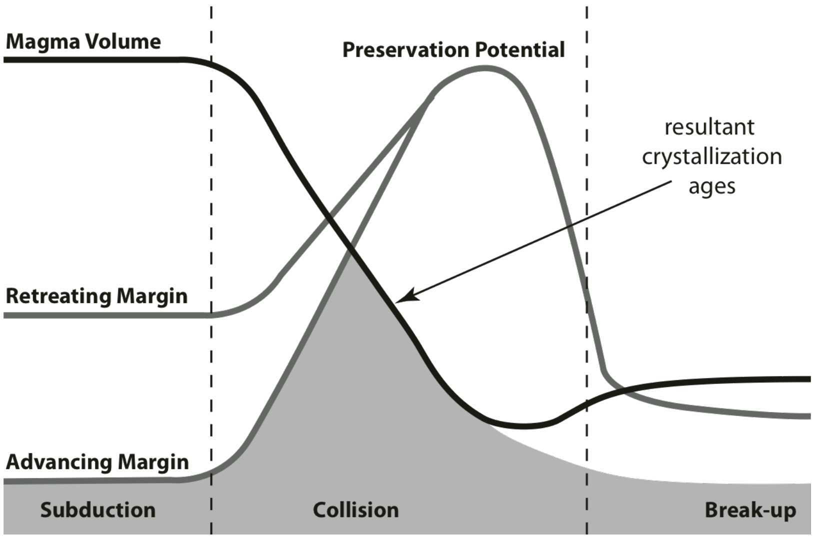

Figure 5.1: The volumes of magma generated (black line) and their likely preservation potential (grey line) vary through the three stages associated with the convergence, assembly, and breakup of a supercontinent (after Hawkesworth et al., 2009). Peaks in igneous crystallization ages that are preserved in the rock record (shaded area) reflect the balance between the magma volumes generated during the orogenic cycle and their respective preservation potential.

vulnerable to destruction through the processes of sediment subduction and subduction erosion at convergent plate margins (Scholl et al., 1980; von Huene and Scholl, 1991; Stern, 1991; Clift et al., 2009; Stern, 2011) as well as through lower crustal delamination (Bird, 1979; Kay & Kay, 1993; Houseman and Molnar, 1997; Schott and Schmeling, 1998; DeCelles et al., 2009). The locus of crustal recycling is primarily at convergent plate margins where the subducting oceanic slab carries both a veneer of sediment and tectonically erodes crustal material from the overriding plate into the mantle. Paradoxically, it is also along convergent plate margins where the vast majority of continental crust is generated. Scholl and von Huene (2009) postulate that at present the ratio of crustal formation and destruction is roughly balanced, resulting in a zero net gain of continental crustal volume, although Stern (2011) estimates the total current rate of crustal recycling is equal to or greater than the rate at which the crust is being replaced by magmatic activity, hence the present total volume of continental crust may in fact be decreasing.

The degree to which the current distribution of continental crust represents the original volume generated has been considerably debated (e.g. Bowring and Housh, 1995; Hawkesworth et al., 2009, 2010; Condie et al., 2011; Cawood et al., 2013). The temporal heterogeneity of presently exposed continental crust lies at the heart of this issue. There is considerable discussion whether the "peaks" and "troughs" of continental crust formation ages (broadly represented by zircon U-Pb crystallization ages) represent periods of episodically increased generation of continental crust (Condie, 1998; Rino et al., 2004; Yin et al., 2012; Walzer and Hendel, 2013; Arndt and Davaille, 2013) or selective crustal preservation (Hawkesworth et al., 2009; Condie et al., 2011; Roberts, 2012). Furthermore, excluding the Archean (see Ernst, 2009; Cawood et al., 2013; Spencer et al., 2014a), zircon age peaks in global compilations of zircon U-Pb ages have been inferred broadly to correspond with the timing of supercontinent formation (e.g., Condie, 1998, 2000, 2003; Hawkesworth and Kemp, 2006; Kemp et al., 2006; Campbell and Allen, 2008; Voice et al., 2011; Arndt and Davaille, 2013).

Proponents of episodes of enhanced magmatism rely on significant mantle-plume activity or mantle-overturn events (Condie, 1998; Rino et al., 2004; Komiya, 2007; Arndt and Davaille, 2013). However, the andesitic composition of the bulk continental crust (Taylor and McLennan, 1985; Rudnick and Gao, 2003) suggests that near steady-state subduction zone magmatism and the resulting volcanic arcs is the dominant contributor of continental crust (see McCulloch and Bennett, 1994; Davidson and Arculus, 2006; Hawkesworth and Kemp, 2006; Cawood et al., 2013). This is contrasted by Roberts (2012) who proposes that the lack of zircons with low εHf during supercontinent assembly represent increased crustal recycling, which he relates to the geodynamic configuration (subduction polarity, age of colliding crust, etc.) of the assembling continental fragments (see also Murphy and Nance, 2003; Collins et al., 2011).

The alternative viewpoint is that the peaks and troughs in the zircon age archive are artifacts of varying preservation potential during and between times of collisional orogenesis leading to the assembly of supercontinents (Hawkesworth et al., 2009; Condie et al., 2011; Roberts, 2012; Cawood et al., 2013). The simplified stages of continental collision display three stages within a generalized geodynamic "cycle" of subduction, collision, and rifting phases (Hawkesworth et al., 2009; Fig. 5.1). Assuming the longevity of mass balance within modern subduction zones, crustal preservation during the subduction phase is minimal despite the large volumes of crust forming from subduction zone magmatism. This is especially true for advancing subduction margins (sensu Cawood et al., 2009) where large amounts of crust are removed by sediment subduction, subduction erosion, and delamination (Clift et al., 2009; DeCelles et al., 2009; Stern, 2011). The preservation potential increases in retreating continental margins in that slab retreat is greater than the subducting plate velocity resulting in significant intra-arc and back-arc extension and generation of continental crust and in extreme examples, oceanic crust (e.g. Cawood et al., 2009). As collisional orogenesis begins and subduction zone magmatism ceases, the latest stage of subduction zone magmatism is often preserved within the foreland of the collisional orogeny (as in the Transhimalayan volcanic arc; Hodges, 2000). Additionally, magmatism produced during the continental collision is dominated by lower crustal melts forming within an over-thickened crust and compressed thermal gradients along with decompression melting during orogenic exhumation (Harris et al., 1986). A key aspect of the selective preservation model of Hawkesworth et al. (2009) is the latest stage of subduction zone magmatism preserved in the continental collision is that which houses the material that subsequently sources the zircons found in the detrital zircon age peak (Fig. 5.1). Collision is followed by the collapse and eventual rifting of the continental crust and relatively minor volumes of mafic magmatism and crustal formation (Scholl & von Huene, 2009; Cawood et al., 2013). Given the above postulates, it is predicted that detrital zircons derived from a collisional orogen will exhibit a dominant age peak associated with the large-volume of latest-stage subduction related magmatism preserved during continental collision.

These first order tectonic processes and the associated ideas for the growth and loss of continental crust are often assessed using combined isotopic systems (particularly U-Pb, Hf, O) primarily linked to voluminous compilations of isotopic analyses of zircon. It is argued that zircons from large rivers that drain a wide array of continental crust ages provide the best way to obtain an unbiased and representative sample of the continental crust therein (e.g. Iizuka et al., 2005, 2010, 2013; Campbell and Allen, 2008; Wang et al., 2009, 2011; Yin et al., 2012). However, Dhuime et al. (2011) have demonstrated a distinct bias toward younger lithotectonic domains. Other workers use large global databases with tens of thousands of analyses to "see through the noise" and assume a close approximation of presently exposed continental crust (Belousova et al., 2010; Condie et al., 2011, 2012; Voice et al., 2011; Dhuime et al., 2011, 2012; Roberts, 2012). Although these methodologies provide a global vantage point of crustal generation and preservation, they are unable to decipher the idiosyncrasies of individual orogenic systems (as in Kemp et al., 2009; Condie, 2013; Boekhout et al., 2013).

Models that propose that detrital zircon age peaks represent periods of time with increased crustal generation imply a significant influx of isotopically depleted material related to island arc and mantle plume magmatism (Stein and Hoffman, 1994; Condie, 1998; Rino et al., 2004; Stein and Ben-Avraham, 2007; Arndt and Davaille, 2013). In contrast, models that predict zircon age peaks are the product of increased crustal preservation during the assembly of supercontinents argue for isotopically enriched magmatism due to crustal reworking associated with subduction margins and collisional orogenesis (Hawkesworth et al., 2009; Condie et al., 2011; Cawood et al., 2013). Further, an additional outstanding question is at what stage of the orogenic cycle does the age peak develop? This has significant bearing on whether the zircon age peaks are the product of enhanced magmatism prior to collision (as in Condie, 1998; Rino et al., 2004; Arndt and Davaille, 2013) or increased preservation of the latest subduction-related magmatism during the subsequent collisional stage of the orogenic cycle (as in Hawkesworth et al., 2009).

To test these models of enhanced crustal production or selective crustal preservation and timing of zircon peak formation we dissect the prominent zircon U-Pb age peak within a single discrete orogenic system associated with the assembly of Rodinia, specifically within the environs of the Grenville Orogen by using detrital zircons from a suite of sedimentary rocks that were deposited before, during, and after the duration of the age peak (Figs. 2, 3, 4). Sedimentary successions are selected from

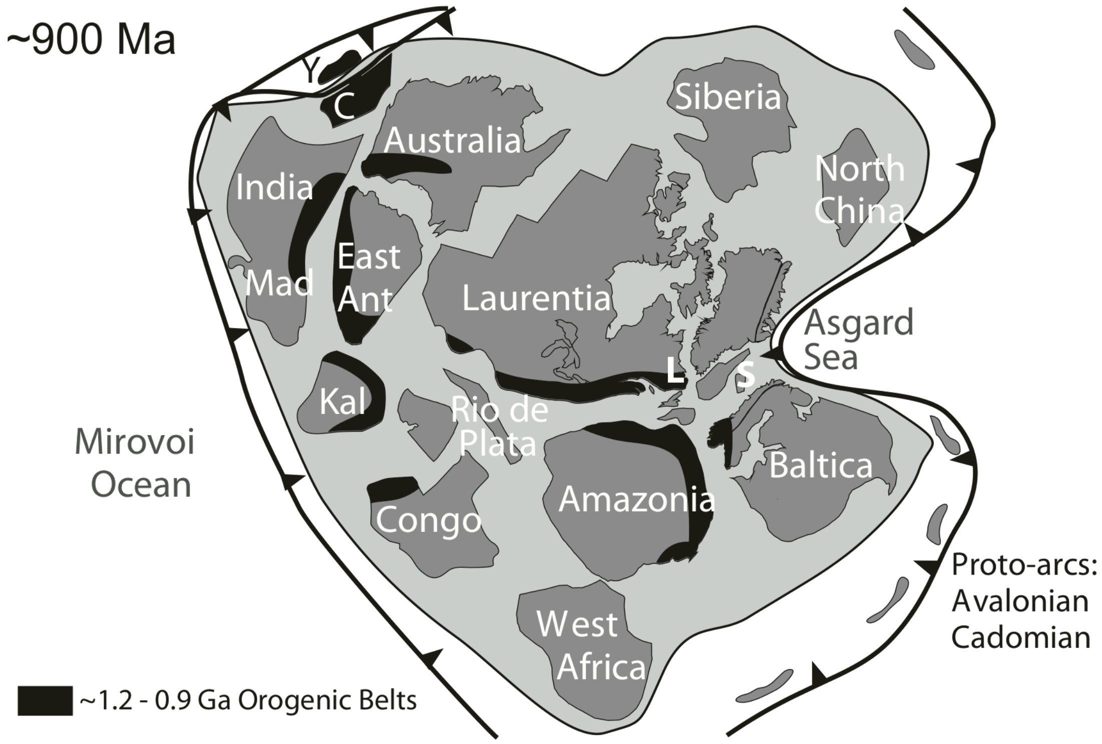

Figure 5.2: Schematic global paleogeography of Rodinia circa 900 Ma and orogenic events from the preceding 300 My are highlighted (after Pisarevsky et al., 2005; Li et al., 2008; Gower et al., 2008; Cawood et al., 2010; Cawood et al., 2013). Kal: Kalahari, Ant: Antarctica, Mad: Madagascar, Y: Yangtze, C: Cathylasia, L: Labador, S: Scotland.

key intervals in Labrador and Scotland that can be divided into pre-, syn-, and post-collision timeframes (Figs. 3, 4, 5). Utilizing detrital zircons deposited during these key intervals of the orogenic cycle allows for the characterization of crustal reworking and recycling during subduction, collision, and rifting, and identification of the timing of dominant age peak development. Coupling U-Pb, Hf, and O isotopic analysis in zircon from these units allows us to investigate: 1) the degree of crustal reworking associated with the respective stages of collisional orogenesis; and 2) how the prominent age peak seen in modern river sediments is derived from the rock archive linked to the Grenville orogenic cycle.

Geologic Setting

Prior to the Grenville Orogeny, the eastern margin of Laurentia (present coordinates) consisted of a series of margin parallel accretionary complexes of Paleoproterozoic to late Mesoproterozoic age (e.g. 1.8-1.6 Ga

Yavpai/Mazatzal/Labradorian, 1.5-1.3 Ga Granite-Rhyolite/Pinwarian provinces, and 1.3-1.1 Ga Composite Arc Belt/Elzevir/Frontenac terranes; see Whitmeyer and Karlstrom, 2007 and Hynes and Rivers, 2010). Together these accreted tectonic zones constitute part of the Great Proterozoic Accretionary Orogen that extended from southwest Laurentia to Baltica (Condie, 2013; Roberts, 2013). The Grenville Orogeny terminated this protracted period of subduction-related crustal growth and accretion (Fig. 5.5).

The Grenville Orogeny is a 1085 - 985 Ma tectonothermal event (as per Gower et al., 2008) resulting from continental collision between the southeastern margin of Laurentia with the north and western margins of the Amazonian and/or Kalahari cratons (Dalziel et al., 2000; Tohver et al., 2002; Jacobs et al., 2008; Ibanez-Mejia et al., 2010) during the assembly of the Rodinian supercontinent (Hoffman, 1991). This orogenic event occurred in two discrete phases, an early phase from 1085 to 1040 Ma, and a later one from 1010 to 985 Ma (Gower et al., 2008). The former is characterized by an initial period of intense crustal thickening and upper amphibolite to granulite facies metamorphism (Darling et al., 2004; Bickford et al., 2008), followed by the intrusion of relatively low-volume granitoid magmatism. The latter is best characterized along the parautochthonous northwestern margin of the Grenville Province and occurred during orogenic rejuvenation resulting in upper amphibolite facies metamorphism (Hynes and Rivers, 2010 and references therein). Similar to magmatism during the early phase, the later phase is comprised chiefly of granitoids

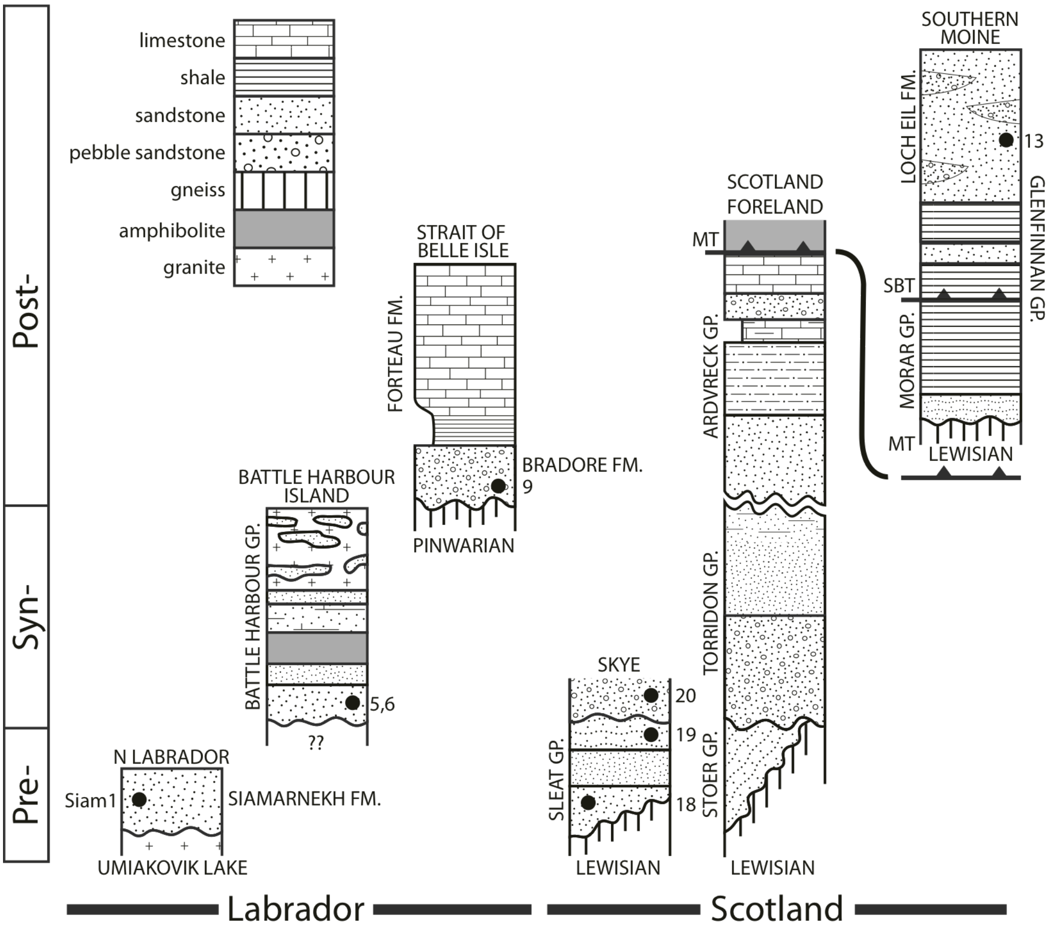

Figure 5.3: Stratigraphic columns of the sedimentary successions of Labrador and Scotland (Labrador after Wheeler, 1964; Cawood and Nemchin, 2001; Gower, 2009; Kamo et al., 2011; Scotland after Rainbird et al., 2001; Kirkland et al., 2008; Lancaster et al., 2011). Pre-, syn-, and post-orogenic depositional ages based upon previous studies discussed in the text.

and pyroxene-bearing granitoids (i.e. Hynes and Rivers, 2010). Following the Grenville Orogeny, extensional collapse and rifting led to the breakup of Rodinia. The initial rifting along this collisional suture is recorded by the opening of the Iapetus Ocean ~620-550 Ma (Thomas, 1991; Williams and Hiscott, 1987; Cawood et al., 2001).

The Sveconorwegian Orogeny is often inferred to be an extension of the Grenville Orogeny (sensu lato) (e.g. Gower et al., 1990; Karlstrom et al., 2001; Cawood et al., 2010), although recent findings have implied geodynamic processes distinct to those in the Grenville Orogeny (Slagstad et al., 2013). To avoid any confounding variables between the Grenville-Sveconorwegian connection, only those sedimentary successions deposited on the "Laurentian" side of the Asgard Sea (see Cawood et al., 2010) are considered in this study.

Sedimentary Successions

The three dominant phases of the Grenville orogenic cycle are represented by 1.8-1.1 Ga subduction, 1.1-0.98 continental collision, and ~0.6 Ga rifting. There are several sedimentary successions in East Laurentia that reflect these three phases in the orogenic cycle and can be categorized as pre-, syn-, and post-collisional assemblages (Figs. 3, 4).

Pre-orogenic Successions

As noted by Cawood et al. (2007), pre-1.1 Ga sedimentary successions can be traced discontinuously along the entire eastern margin of Laurentia and accumulated in behind-arc and intra-arc basins. Within the Grenville Province of eastern Canada, these sedimentary units include the Wakeham (and equivalent units; van Breemen and Corriveau, 2005) and Seal Lake Groups (van Nostrand and Lowe, 2010), and Siamarnekh Formation (Wheeler, 1964). Pre-orogenic sedimentary units are also found in northern Scotland, the Stoer and Sleat Groups (Kinnaird et al., 2007).

Syn-orogenic Successions

The inferred continental collision associated with the Grenville Orogeny resulted in deposition of a widespread sedimentary apron found throughout Laurentia. Although these sedimentary successions have limited the extent of present exposure, syn-orogenic sedimentary rocks have been identified in West Texas (Lanoria/Hazel formations; Spencer et al., 2014b), Ohio (Middle Run formation; Santos et al., 2002),

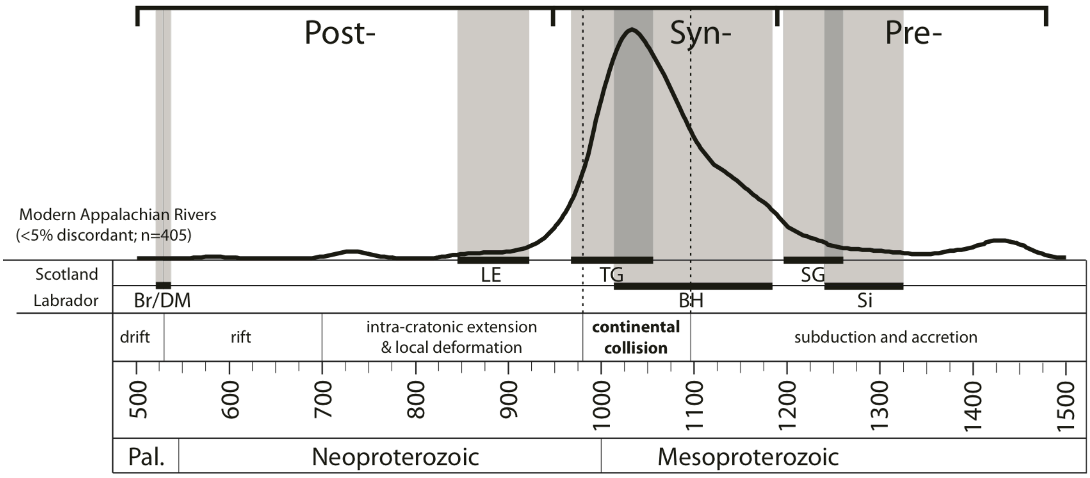

Figure 5.4: The age range of pre-, syn-, and post-orogenic sedimentary successions sampled in this study overlain by the zircon U-Pb age spectra (kernel density estimation: Vermeesch, 2012) from Eriksson et al. (2003). The vertical axis represents relative probability. Highlighted above the time scale are the stages of the Grenville orogenic cycle (see text for references). Br: Bradore Formation; DM: Double Mer Formation; LE: Loch Eil Formation; TG: Torridon Group; BH: Battle Harbour Psammite; SG: Sleat Group; Si: Siamarnekh Formation.

southern Ontario (Flinton Group and equivalents; Sager-Kinsman and Parrish, 1993), eastern Labrador (Battle Harbour Group; Kamo et al., 2011), and northern Scotland (Applecross/Aultbea formations and Morar Group; Kinnaird et al., 2007; Krabbendam et al., 2008). These syn-collisional basins developed during discrete alternating pulses of compression and extension/collapse within the over-thickened crust between ~1190 and 1100 Ma (Cawood et al., 2007).

Post-orogenic Successions

Following the climax of collisional orogenesis, the collapse and eventual rifting of the Grenville Orogen, sediment accumulated within intracratonic rift basins as well as along the rift flanks of younger extensional basins during the opening of the Iapetus Ocean (Cawood et al., 2006). These post-orogenic sedimentary successions are represented by a Neoproterozoic-Cambrian outcrop belt that spans the eastern margin of Laurentia from Texas to Newfoundland and from there into northern Scotland and eastern Greenland (Cawood et al., 2007 and references therein; Spencer et al., 2014b). Additionally, detritus from the Grenville Orogen was dispersed across the entire expanse of Laurentia and preserved in Neoproterozoic sedimentary successions extending to the western and northernmost margins of the craton (Dehler et al., 2010; Spencer et al., 2012; Rainbird et al., 1997, 2012).

Although sedimentary rocks from the pre-, syn-, and post-stages are found throughout much of Laurentia, only eastern Labrador and northern Scotland preserve all three successions and these regions (Figs. 3, 4) were targeted for sampling thereby enabling direct comparisons between all three tectonostratigraphic stages.

Pre-, Syn-, Post-orogenic successions in Labrador

The Siamarnekh Formation of northern Labrador is composed of subarkose sandstone unconformably overlying the ~1320 Ma Umiakovik Lake batholith (Wheeler, 1964; Emslie and Loveridge, 1992). The depositional age of the Siamarnekh Formation is bracketed by the underlying Umiakovik Lake batholith (Emslie and Loveridge, 1992) and a presumed Grenville-age thrust that cuts the Siamarnekh Formation and places the batholith on top of the formation (Wheeler, 1964). The formation is a likely correlative of the ~1.27-1.23 Ga Seal Lake Group ~100 km to the south (van Nostrand and Lowe, 2010). Given the depositional constraints (and the detrital zircon age information described below), this formation is classified as a pre-orogenic sedimentary succession.

The syn-orogenic succession in Labrador is represented by a package of psammitic, semi-pelitic and calc-silicate rocks on Battle Island, near the town of Mary's Harbour (Gower, 2009). Deposition of the supracrustal rocks on Battle Island are constrained between 1200 Ma and 1030 Ma by detrital and igneous zircon U-Pb geochronology (Kamo et al., 2011). These units represent the only known occurrence of post-1.5 Ga sedimentary rocks with a Grenville metamorphic overprint in the eastern interior Grenville province.

Post-orogenic Neoproterozoic to Cambrian sedimentation is recorded in the Double Mer and Bradore formations of Labrador and Newfoundland. These were deposited during continental rifting associated with the breakup of Rodinia (Cawood et al., 2001; Cawood and Nemchin, 2001). Both of these formations have an assumed Early Cambrian age, although the absence of Cambrian trace fossils in the Double Mer Formation might imply a late Neoproterozoic age (Gower et al., 1986; Williams and Hiscott, 1987). The Double Mer Formation consists of arkosic sandstone, conglomerate, siltstone, and shale and was deposited in a series of rift basins extending at least 300 km inland from the Labrador coast (Gower et al., 1986). The Bradore Formation has a similar lithology to the Double Mer Formation and is dominated by arkosic sandstone, but is only found within 30 km of the Labrador Coast (including Belle Isle) and on Newfoundland (Cummings, 1983; Williams and Smyth, 1983; Williams and Hiscott, 1987).

Pre-, Syn-, Post-orogenic successions in Scotland

The pre-orogenic sedimentary rocks in Scotland are represented by fluvial-alluvial sandstone, sedimentary breccia, and minor lacustrine mudstones of the Sleat and Stoer groups (Stewart, 2002; Kinnaird et al., 2007). These groups were deposited in non-marine rift basins and have facies attributed to rapid lateral and vertical changes between coarse- and fine-grained lithologies. They rest nonconformably on the Paleoproterozoic to Archean age Lewisian basement and are overlain by the Neoproterozoic Torridon Group. Maximum depositional age for the Sleat Group is constrained by the youngest zircon U-Pb date of 1247 ± 34 Ma (Kinnaird et al., 2007). The Stoer Group has been shown to only contain Paleoproterozoic and Archean zircons (Kinnaird et al., 2007; Williams and Foden, 2011; Lancaster et al., 2011) but a minimum depositional age is estimated using a Pb-Pb isochron age of 1199 ± 70 Ma on a thin stromatolitic bed near the base (Turnbull et al., 1996) as well as an Ar-Ar age of 1177 ± 5 Ma on the impact-related Stac Fada Member (Parnell et al. 2011). The youngest U-Pb zircon analysis from this study (discussed below) also gave an age of 1198 ± 12 Ma further lending credence to a ~1200 Ma depositional age.

Overlying the Sleat and Stoer groups is the Torridon Group, which is composed of the basal conglomerate and finer siliciclastics of the Diabaig Formation in turn overlain by the Applecross, Aultbea, and Cailleach Head formations representing syn-orogenic sediments. The Torridon Group is composed of ~6 km of upward-fining, fluvial pebbly arkose to siltstone with striking stratigraphic monotony and lithologic homogeneity across hundreds of square kilometers (Kinnaird et al., 2007). Paleocurrent and U-Pb detirtal zircon data imply these sediments were derived predominantly from the Laurentian continent to the west (Williams, 2001; Stewart, 2002). Several workers propose that the Torridon Group was deposited in a series of extensional basins that formed during the late-stages of the Grenville Orogeny (Soper and England, 1995; Williams and Foden, 2011). The clockwise rotation of Baltica (between ~1120 and 1000 Ma; Salminen et al., 2009; Cawood et al., 2010) and the accompanying opening of the Asgard Sea (between Greenland and Baltica, Fig. 5.2) facilitated post-Grenville convergence during the Renlandian Orogeny. Cawood et al. (2010) further propose that

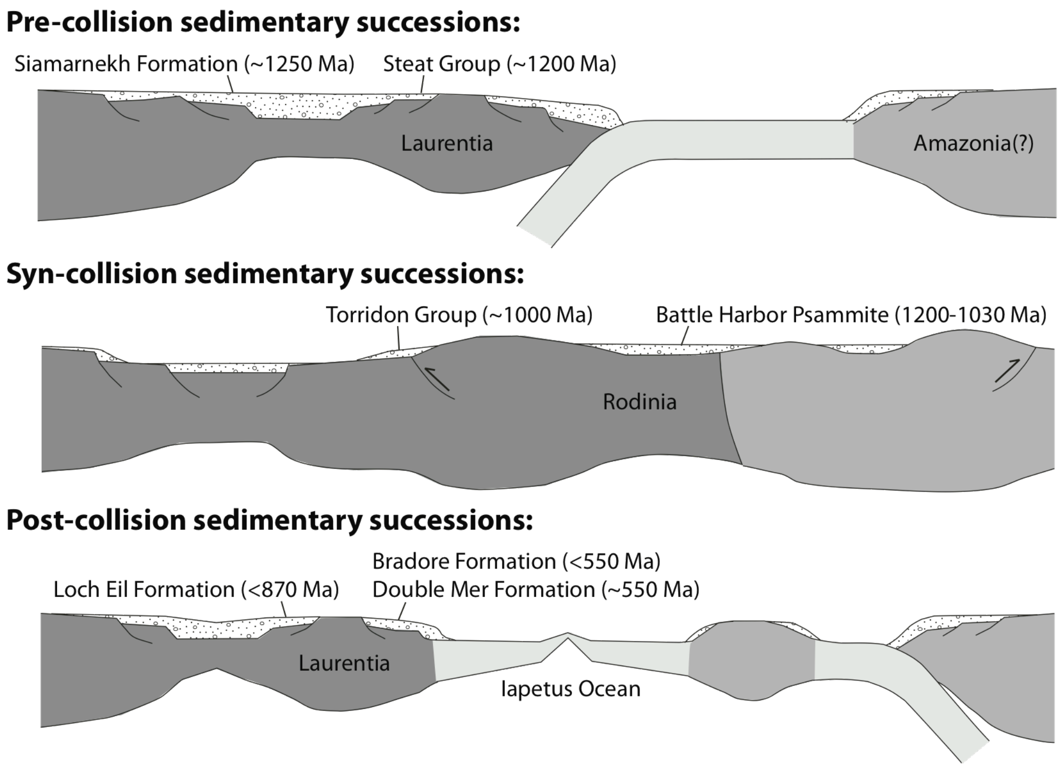

Figure 5.5: Schematic cross-sections from Laurentia to Amazonia(?) showing positions of sedimentary basins pre-, syn- and post-Rodinian supercontinent cycle (after Cawood et al., 2006). Depositional ages for sedimentary successions are described in the text.

sedimentation associated with the Torridon Group was derived from the Grenvillian orogenic welt and deposited within extensional basins resulting from the opening of the Asgard Sea. Other workers, though, consider the facies and stratigraphic characteristics of the Torridon rocks to be more apropos to deposition in the foreland basin of the Grenville Orogeny (Nicholson, 1993; Rainbird et al., 2001; Kinnaird et al., 2007; Krabbendam et al., 2008). Maximum depositional age of these syn- (to late) orogenic sedimentary rocks is constrained by the youngest U-Pb zircon date of 1046 ± 26 Ma within the upper Torridon Group (Rainbird et al., 2001). The minimum depositional age of 977 ± 38 Ma is obtained using Rb/Sr within a mudstone of the Applecross Formation that presumably dates early diagenesis (Turnbull et al., 1996).

Table 5.1: GPS locations and lithology of samples from this study.

Samples	Formation	Lithology	Latitude	Longitude	Elev (ft)
CS11-1	Double Mer	CG Ss	52°50'37.7" N	60°08'30" W	216
CS11-3	Double Mer	CG Ss	52°50'48.8" N	60°08'28.2" W	214
CS11-5	Battle Harbor	MPs	52°16'40.3" N	55°34'51.8" W	13
CS11-6	Battle Harbor	MPs	52°16'48.9" N	55°35'5.7" W	12
CS11-9	Bradore	CG Ss	51°34'10.21" N	56°46'17.35" W	95
Siam1	Siamarnekh	CG Ss	57°04'31.91" N	63°07'42.45" W	1814
CS11-13	Loch Eil (Low)	F Ss	56°52‘36.90“N	5°20‘46.85“W	15
CS11-18	Loch na Dal (Low)	M-CG Ss	57°9'38.11"N	5°47'46.61"W	6
CS11-19	Kinloch (Up)	VF Ss	57°12‘57.13“N	5°49‘55.66“W	74
CS11-20	Applecross (Low)	M Ss	57°13‘53.83“N	5°50‘16.04“W	63

The earliest phase of post-orogenic sedimentation in Scotland is represented by the Glenfinnan and Loch Eil groups (Soper et al., 1998). These groups form a conformable series of shallow marine sandstones and siltstones interpreted to have been deposited in northeast trending half grabens (Strachan, 1985; Soper et al., 1998). The Glenfinnan and Loch Eil groups were derived from Laurentia and deposited after ~980 Ma (Cawood et al., 2004) and before the intrusion of the West Highland granitic gneiss at 870 ± 30 Ma (Rogers et al., 2001) and the associated metagabbros at 873 ± 6 Ma (Millar, 1999).

Methods

Zircon U-Pb Geochronology

Ten ~3 kg sedimentary samples were collected within each of the pre-, syn-, and post-orogenic successions from localities in south eastern Labrador (Battle Harbor, Double Mer, and Bradore formations) and northern Scotland (Loch Eil, Applecross, and Sleat formations) with a sample from the Siamarnekh Formation of northern Labrador. See Table S1 for sample locations and descriptions. Zircons were extracted using standard techniques (i.e. Wilfley table, heavy liquid, Franz magnetic separation),

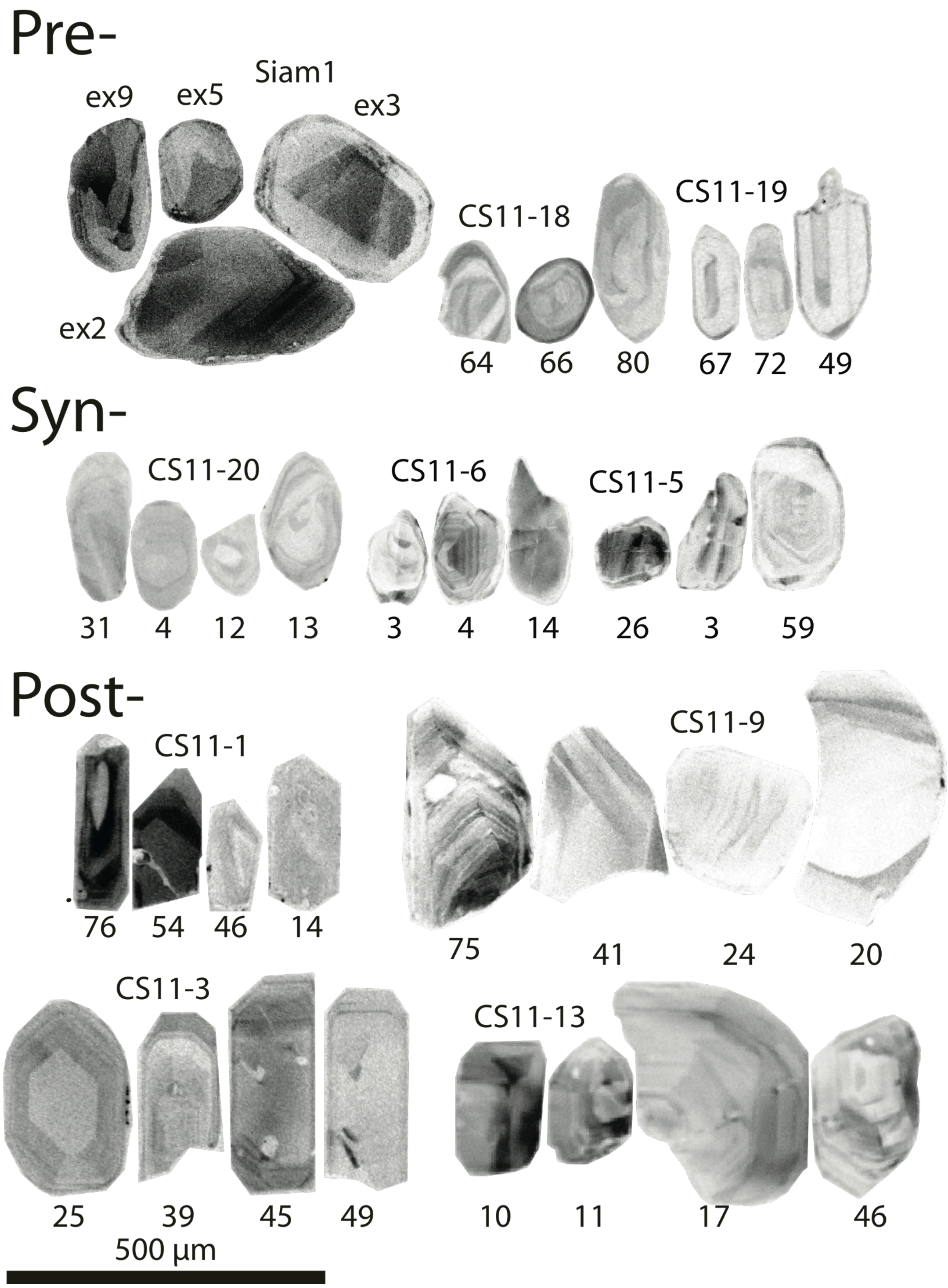

Figure 5.6: Cathodoluminescence images of representative zircons and in situ locations for O, U-Pb, and Hf analyses from each of the samples in this study.

mounted in epoxy resin and polished to expose a cross section through the center of the grains.

Zircons were examined for zoning patterns using cathodoluminescence (CL) and back-scattered electron (BSE) images (Fig. 5.6). Zircon U-Pb geochronology was performed by laser ablation multi-collector inductively coupled plasma mass spectrometry (LA-MC-ICP-MS) at the NERC Isotope Geosciences Laboratory, Keyworth, UK (NIGL). All unknown and standard data are reported in the online supplemental materials Data Repository 1.

The instrumentation used for analyses comprises a Nu Instruments Plasma multi-collector HR-ICP-MS coupled to a New Wave Research UP193FX excimer laser ablation system and low-volume ablation cell (Horstwood et al., 2003). Laser ablation was accomplished with a 25 μm diameter spot size with a laser fluence of 8-19 J/cm^2 at 6-7 Hz for 10 seconds of integration. ^{202}Hg, ^{204}Pb, ^{204}Hg, ^{206}Pb, ^{208}Pb, ^{232}Th, ^{207}Pb, and ^{235}U were analyzed using 100 ms integration times. 238 U was calculated using ^{235}U * 137.818 (Hiess et al., 2012). The Pb/Pb and U/Pb ratios were normalized to bracketing primary standards of 91500, GJ-1, and Plesovice, based on the average measured value of the standard compared to the ratio determined by ID-TIMS (Wiedenbeck et al., 1995, Jackson et al., 2004; Slama et al., 2008; see also Data Repository 2). All Pb/Pb and U/Pb standard analyses have an external reproducibility of < 2 % (2σ). Analyses significantly above ^{204}Pb (common lead) and below ^{207}Pb detection limits were rejected.

Systematic uncertainties were propagated using quadratic addition incorporating the internal and external reproducibility of the reference material during each analytical session; these are the isotopic uncertainties of the reference material as determined by ID-TIMS, long term variance of the NIGL Nu Plasma MC-ICP-MS, and decay constant uncertainties (e.g. Schoene et al., 2006). Accepted ages were selected from a 95% concordant subset using the ^{206}Pb/^{238}U and ^{207}Pb/^{206}Pb ages. Visualization of U-Pb concordia and zircon ages is done using Isoplot 4.0 (Ludwig, 2003) and densityplotter (Vermeesch, 2012). GPS locations of samples are presented in Table 1.

Zircon Hf Isotopic Analysis

Near concordant (> 95 % concordance) U–Pb zircon ablation sites from each of the samples were re-analyzed to measure their respective Lu–Hf isotopic compositions.

Isotope analyses were carried out at NIGL using a Thermo Scientific Neptune Plus MC-ICP-MS coupled to a New Wave Research UP193FX excimer laser ablation system and low-volume ablation cell (Horstwood et al., 2003). Helium was used as the carrier gas through the ablation cell with Ar makeup gas being connected via a T-piece and sourced from a Cetac Aridus II desolvating nebulizer. After initial set-up and tuning a 2% HNO_3 solution was aspirated during the ablation analyses. ^{175}Lu, ^{172}Yb, ^{173}Yb, ^{176} Hf, ^{178}Hf , ^{179}Hf, and ^{180}Hf were measured simultaneously during static 30 second ablation analyses (35 μm diameter; fluence = 8-10 J/cm^2).

A standard–sample–standard bracketing technique, using Mudtank and 91500 reference zircons, was used to monitor accuracy and precision of internally corrected Hf isotope ratios and instrumental drift with respect to the Lu/Hf ratio. Hf reference solution JMC475 (analyzed doped with 50 ppb Yb and undoped) was analyzed during the analytical session to allow normalization of the laser ablation Hf isotope data. Correction for ^{176}Yb on the ^{176}Hf peak was made using reverse-mass-bias correction of the ^{176}Yb/^{173}Yb ratio (0.7941) empirically derived using Hf mass bias corrected Yb-doped JMC475 solutions (cf. Nowell and Parrish, 2001). ^{176}Lu interference on the ^{176}Hf peak was corrected by using the measured ^{175}Lu and assuming ^{176}Lu/^{175}Lu = 0.02653. Reference material analyses and sample results are provided in Data Repository 2.

Zircons incorporate a minor amount of ^{176}Lu during crystallization, which decays to ^{176}Hf. To account for this we use the ^{176}Lu/^{177}Hf ratios to correct the measured ^{176}Hf/^{177}Hf ratio for the interpreted ^{207}Pb/^{206}Pb crystallization age. Subsequently, the ^{176}Hf/^{177}Hf$_{initial}$ ratio is calculated using the measured ^{176}Lu/^{177}Hf ratio and the decay constant of Soderlund et al. (2004). Normalizing ^{176}Hf/^{177}Hf$_{initial}$ ratios to the ^{176}Hf/^{177}Hf value of the present-day bulk silicate Earth (BSE: 0.282785; Bouvier et al., 2008) allows the calculation of εHf [(^{176}Hf/^{177}Hf$_{initial}$/^{176}Hf/^{177}Hf$_{BSE}$)*10^4]. Approximately 20 % of the analyses were rejected due to extremely variable signal and high ^{178}Hf /^{177}Hf and ^{176}Hf/^{177}Hf uncertainties (> 20 %) that is likely due to ablation through different compositional and/or age zones within an individual zircon grain. The uncertainty propagation of the epsilon notation also includes the uncertainty of the ^{207}Pb/^{206}Pb crystallization age, as it is time integrated. Although this may be an over propagation of uncertainty, we prefer this conservative approach for the epsilon notation when defining specific fields of similar εHf compositions. Uncertainties that incorporate the crystallization age uncertainty are on average 50 % (1σ = 20 %) larger than uncertainties that do not consider the crystallization age uncertainty.

Zircon O Isotopic Analysis

Prior to U-Pb and Hf analyses, zircon oxygen isotopes were measured via ion microprobe using the Cameca 1270 at the Edinburgh Ion Microprobe Facility (EIMF), University of Edinburgh and the Cameca 1280 at the NordSIM Laboratory for Isotope Geology, Swedish Museum of Natural History with methods similar to those described by Whitehouse and Nemchin (2009). The $^{133}Cs+$ primary ion beam was accelerated at 10 kV, with an intensity of ~2.5-3.0 nA current being used, and charge compensation of the Au-coated samples accomplished using a normal incidence electron flood gun. A pre-sputtering time of 30-60 seconds to remove the Au-coat was performed with a fixed beam that produced roughly elliptical 15 by 20 µm pits. Ions were extracted with a 10 kV voltage, and low energy secondary ions of 16O and 18O were selected using an energy window of 60 eV. During each analysis, the secondary beam was automatically scanned across a small field aperture for centering along the ion-optic axis, followed by scanning the entrance slit across the contrast aperture.

Reference materials were analyzed in the same mount as the samples, bracketing sample analyses, with an average of 10 sample analyses between each set of reference analyses. At EIMF, a total of 165 analyses of an internal zircon reference material (Laura) were made to calibrate 351 sample analyses. At EIMF, a total of 197 analyses of the zircon reference material 91500 (Wiedenbeck et al., 2004) were made to calibrate 616 sample analyses. Uncertainties on individual analyses are reported at 1σ level. Values of $\partial^{18}O$ are standardized to Vienna Standard Mean Ocean Water (VSMOW) and reported in standard per mil notation.

The instrumental mass fractionation factor (IMF) is corrected using the accepted values for the reference material, which for Laura is $\partial^{18}O_{VSMOW}$ = 5.3 ‰ (measured in-house), and for 91500 is ∂18OVSMOW = 9.9 ‰ (Wiedenbeck et al., 2004). Measured $^{18}O/^{16}O$ is normalized by using Vienna Standard Mean Ocean Water compositions (VSMOW), then corrected for the instrumental mass fractionation factor (IMF). Analytical pits were examined using a scanning electron microscope at the University of Edinburgh to assure normal pit shape. Analyses with irregular analytical spots were discarded (see also Cavosie et al., 2005)

Zircons in equilibrium with pristine mantle-derived melts have $\partial^{18}O$ values between 4.7 and 5.9 ‰ (Valley, 2003). Higher ∂18O values reflect a component enriched in ^{18}O, typically interpreted as resulting from assimilation of supracrustal material into the magma from which the zircon crystallized (Eiler, 2001). Importantly oxygen isotope ratios of igneous rocks are not sensitive to the age of material assimilated (as with Hf isotopes) but are entirely determined upon the amount of material that has experienced low-temperature oxygen fractionation (Valley, 2003). Melts that incorporate these sediments offset zircon $\partial^{18}O$ values accordingly (Valley et al., 1994; Roberts et al., 2013).

Results

U-Pb Geochronology

Results and instrumentation parameters of U-Pb geochronology are presented in Figures 7, 8, and Table S1. Cathode luminescence imaging of the detrital zircons shows compositional zoning that is variably complex but dominated by normal magmatic zonation (Fig. 5.6). All U-Pb age data is filtered for 5% discordance.

Pre-orogenic Successions

Zircons from sample Siam1 display major age peaks at 2150 Ma and 1900 Ma with a few Archean analyses ($^{207}Pb/^{206}Pb$ age). Although only 50 of the 129 analyses were < 5 % discordant, all analyses have the same age distributions as the concordant subset. Two samples from the Sleat Group are analyzed (Loch na Dal and Kinloch formations). Zircons from the Kinloch Formation have dominant age peaks at 2700 and 1800 Ma. The Loch na Dal Formation has a dominant age peak at 1660 and a spread of ages from 1500 to 1300 Ma ($^{207}Pb/^{206}Pb$ age). ~80% of the analyses from the Sleat Group are < 5 % discordant.

Syn-orogenic Successions

Zircons from samples CS11-5 and -6 have dominant age peaks at 1800, 1520, 1250, 1150 Ma and scattered Archean ages ($^{207}Pb/^{206}Pb$ age). ~85% of the analyses are < 5 %. Zircons from samples CS11-20 show dominant age peaks at 1780 and 1660 Ma, several small peaks between 1550 and 1050 Ma, and several Archean ages (^{207}Pb/^{206}Pb age). Although only 44 of the 75 analyses were < 5 % discordant, all analyses have the same age distributions as the concordant subset. The combined U-Pb analyses for the syn-orogenic sedimentary successions have a single dominant age peak at 1780 Ma with several sub-peaks of decreasing proportions from 1780 Ma to ~1100 Ma.

Post-orogenic Successions

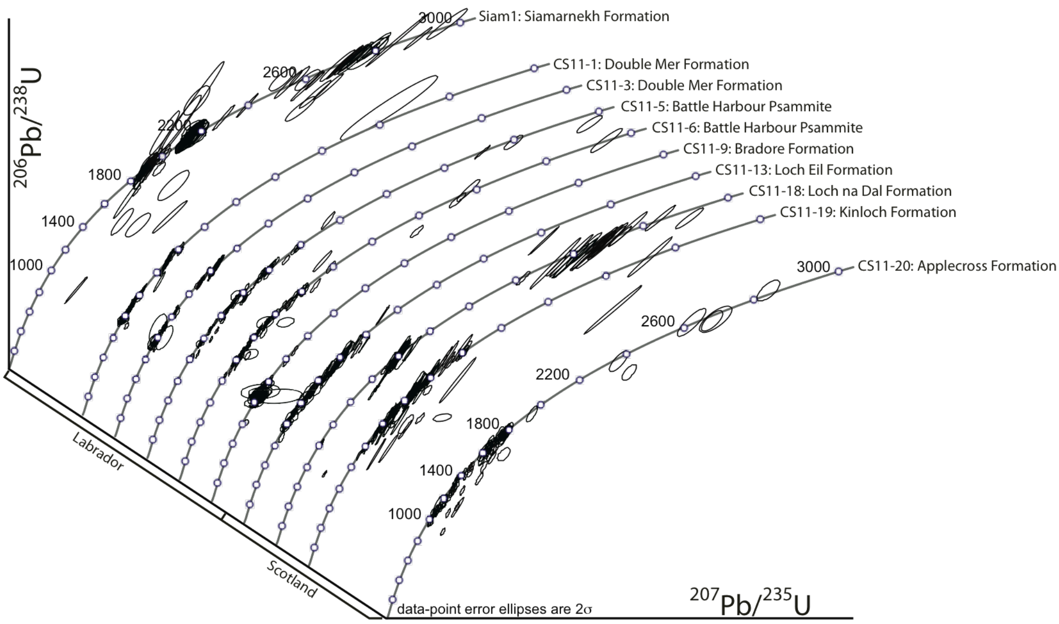

Figure 5.7: Pb/U concordia diagram of ages (Ma) of zircon grains from each sample. Uncertainties are shown at the 2σ level. Diagram was constructed with the use of Isoplot (Ludwig, 2008).

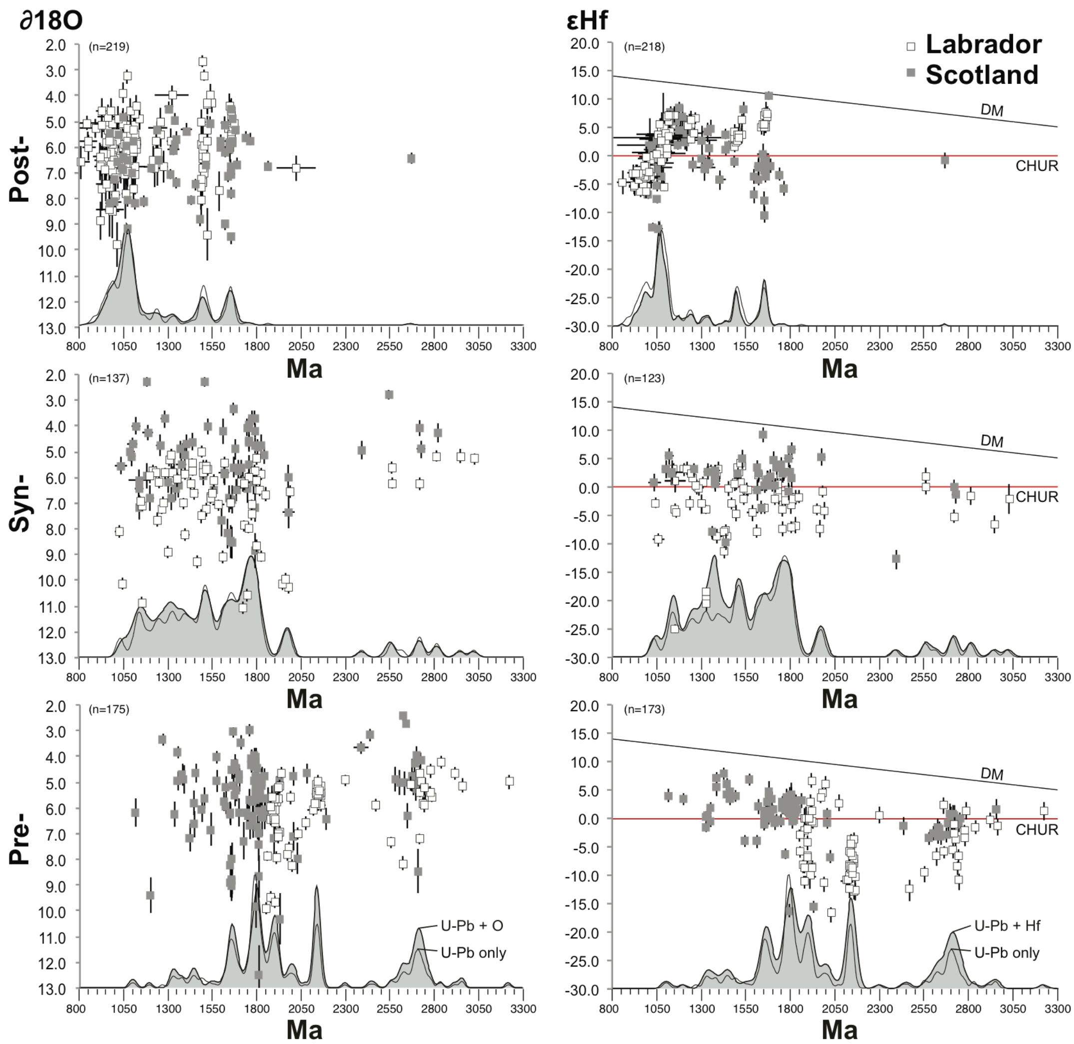

Figure 5.8: Left: ∂^{18}O (‰ VSMOW) vs. U-Pb analyses of detrital zircons from the pre-, syn-, and post-orogenic sedimentary successions from Labrador and Scotland. Uncertainties are displayed as 2σ. Right: εHf(t) vs. U-Pb analyses of detrital zircons from the same. Uncertainties are displayed as 2σ. DM: depleted mantle; CHUR: Chondritic unfractionated reservoir.

Two samples of the Double Mer Formation were analyzed: CS11-1 has dominant age peaks at 1500, 1230, 1060, and 1000 Ma, and CS11-3 has similar dominant age peaks at 1650, 1500, 1230, 1100, and 980 Ma. ~85% of the analyses are < 5 %. Sample CS11-9 has a single dominant age peak at 1060 Ma and 90% of the analyses are < 5 % discordant. Zircons from samples CS11-13 have dominant age peaks at 1640, 1300, and 1040 Ma (< 5 % discordant subset of ^{207}Pb/^{206}Pb ages). 80% of the analyses are < 5 % discordant. Combined U-Pb analyses for post-orogenic sedimentary successions reveal a single dominant age peak at 1060 Ma and two minor peaks at 1450 and 1600 Ma. In summary, U-Pb zircon age spectra within the pre-orogenic sedimentary successions are dominated by pre-1.5 Ga ages, the syn-orogenic strata display similar Paleoproterozoic age peaks and a suite of subdued age peaks from 1.5 to 1.1 Ga, and post-orogenic strata are dominated by post-1.1 Ga zircon ages along with minor amounts of pre-1.1 Ga zircon ages (Fig. 5.7).

Zircon Hf and O Isotopes

Importantly, the U-Pb age spectra of each sample and the subset analyzed for Hf and O are nearly identical thereby providing a dataset representative of the U-Pb age spectra (Fig. 5.9). Pre-orogenic samples have εHf values that span from the depleted mantle to -15 in pre-1800 Ma zircons and are increasingly depleted to ~CHUR post-1800 Ma. Syn-orogenic samples have a wide spread of εHf values, mostly between 10 and -10. εHf values in post-orogenic samples increase from ~CHUR at 1800 Ma to ~5 at 1200 Ma (~0.7 epsilon units per million years) and then decrease from ~5 at 1200 Ma to -6 at 900 Ma (~4.6 epsilon units per million years).

∂18O values for pre-orogenic samples range from ~3 to 12 ‰ and increase from ~3000 Ma to 1800 Ma and decrease thereafter. Syn-orogenic samples have a broad range of ∂^{18}O values from 2 to 11 ‰ and post-orogenic samples have a similar pattern to the εHf values where the range of values decreases from ~1800 Ma to 1250 Ma and then increases thereafter.

Discussion

Zircon Age Spectra and Isotopic Composition

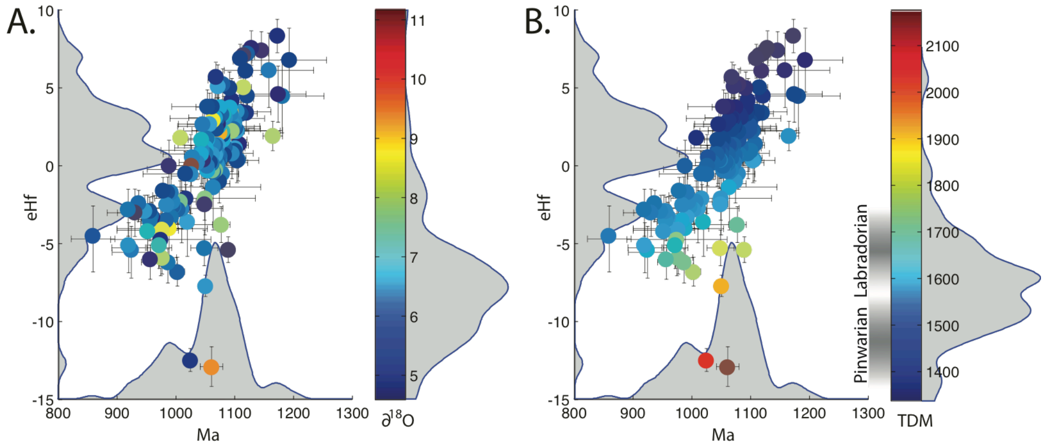

Figure 5.9: U-Pb age versus εHf of post 1.2 Ga zircons within the post-orogenic sedimentary successions overlain in A with a color spectrum representing $\partial^{18}O$ values and depleted mantle model ages (TDM) in B. Along the x-y axes and the color bar in both A and B are the KDEs of the U-Pb ages,εHf values, $\partial^{18}O$ values (‰ VSMOW), and TDM (Ma) respectively. Uncertainties are displayed for both U-Pb ages and εHf values at 2σ.

U-Pb ages and Hf-O isotopic compositions reported in this study are consistent with those reported previously from the sampled units in Scotland and the Battle Harbour Psammite in Labrador (U-Pb: Friend et al., 2003; Cawood et al., 2007; Kinnaird et al., 2007; Kirkland et al., 2008; Kamo et al., 2011; Hf-O: Lancaster et al., 2011). The pre-orogenic sediments in proximity to the Grenville Orogen (sensu stricto, e.g. Siamarnekh Formation and Sleat Group) display zircon U-Pb age spectra lacking in post-1.3 Ga age peaks. Depositional provenance of these pre-orogenic sediments is characterized by locally derived Laurentian basement (see Gower and Tucker, 1994; Kinnaird et al., 2007). The range of Hf isotopes display increasingly radiogenically enriched values from the ~3.0 Ga zircons until ~1.8 Ga, after which Hf values in post-1.8 Ga zircons become increasingly depleted (Fig. 5.9).

Syn-orogenic strata display a suite of near equant Mesoproterozoic populations and varying amounts of Paleoproterozoic and Archean zircons. The absence of a dominant

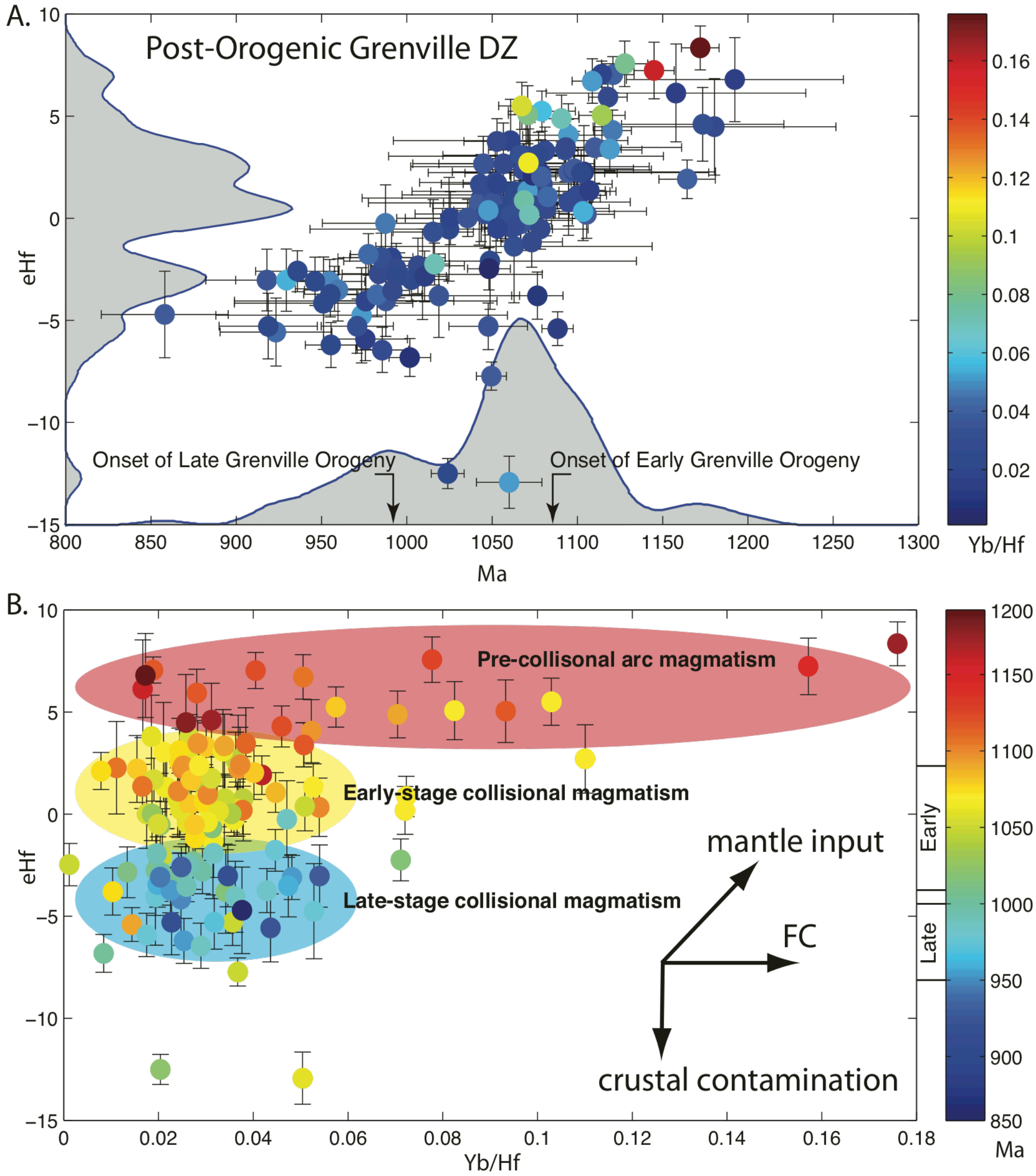

Figure 5.10: U-Pb age versus εHf of post 1.2 Ga zircons from the post-orogenic sedimentary successions overlain with a color spectrum representing the measured Yb/Hf ratio in each zircon. Timing of the early and late Grenville Orogeny after Gower et al. (2008). B) Same as in A although measured Yb/Hf ratio plotted against εHf with the U-Pb age in the color spectrum. The color spectrum is divided into late-stage subduction zone magmatism, and early-/late-stage magmatism based upon Gower et al. (2008). FC: Fractional crystallization. Trajectories are explained in the text.

Grenville age peak is curious given the syn-Grenville depositional age. For example, the Battle Harbour Psammite and Applecross Formation have depositional ages from ~1200 Ma to ~1030 Ma (Kamo et al., 2011) and ~1200 Ma to ~1050 Ma (Rainbird et al., 2001; Kinnaird et al., 2007), respectively. Assuming a Laurentian derivation, the origin of these Mesoproterozoic zircons can be ascribed to four temporally distinct tectono-magmatic events all of which are related to long-lived convergence from ~1.5 to 1.1 Ga, viz. 1.5-1.3 Ga island arc, continental arc, and back-arc magmatism, 1.3-1.2 Ga continental arc and back-arc magmatism, ~1.1 Ga within-plate magmatism, and 1.09-0.95 Ga magmatism directly associated with collisional orogenesis (see Gower and Korgh, 2002; Hynes and Rivers, 2010). Zircons that formed during each of the distinct subduction periods mentioned above are nearly equally represented in the syn-orogenic sedimentary successions signifying that neither a preservation nor production bias is present in these samples; rather the absence of a dominant age peak implies near steady-state zircon production post-1.5 Ga. Hf and O isotopes in zircon from syn-orogenic strata show a wide array of εHf values for post-1.5 Ga zircons ranging from the depleted mantle to -25. Similarly ∂18O values span from ~2 to ~11 ‰ in post-1.5 Ga zircons. The increasing of $\partial^{18}O$ and εHf in these syn-orogenic sediments imply significant reworking of supracrustal material inherited from pre-orogenic (Paleoproterozoic?) continental crust (average depleted mantle model age for post-1.5 Ga zircons = 1.85 Ga).

Importantly, only the detrital zircon age spectra from post-orogenic sedimentary successions from this study reveal the dominant Grenville age peak seen in modern sediments and global compilations (e.g. Eriksson et al., 2003; Campbell and Allen, 2008; Voice et al., 2011). This age peak ranges from ~1150 to 900 Ma and is centered

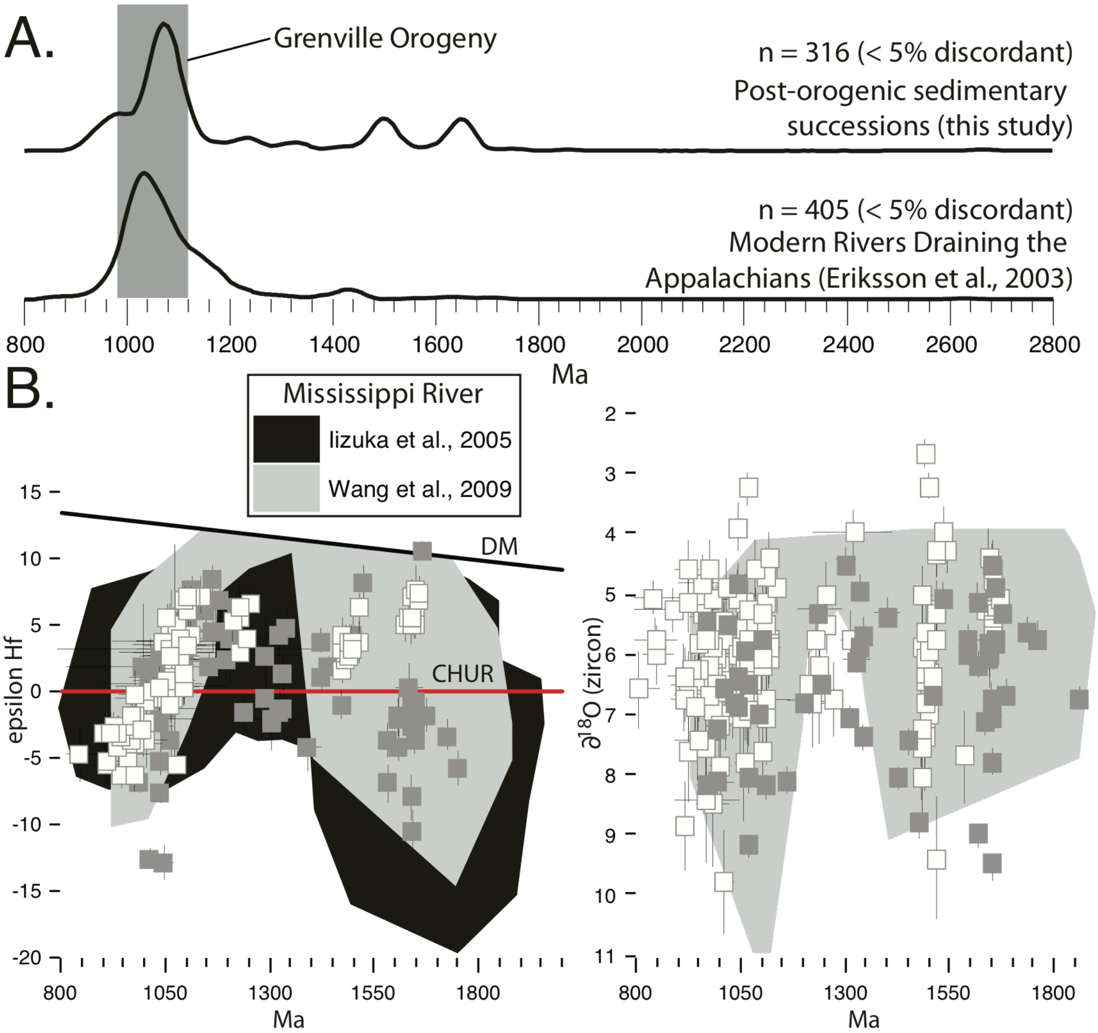

Figure 5.11: KDE of zircon age spectra of the combined post-orogenic sedimentary successions from Labrador and Scotland (top) compared with the KDE of zircons ages from modern rivers draining the Appalachian mountains (data from Eriksson et al., 2003). B) U-Pb ages versus εHf (left) and U-Pb ages versus ∂^{18}O (‰ VSMOW) (right) of the post-orogenic sedimentary successions from Labrador and Scotland (symbols are the same as in Fig. 9). Underlying fields represent εHf and ∂^{18}O compositions in zircons from the modern Mississippi river delta (data from Iizuka et al., 2005 and Wang et al., 2009). Each of the datasets show similar 'mustache' patterns wherein values become increasingly depleted in radiogenic Hf (increasing εHf) and in 18O (decreasing ∂^{18}O ; note that ∂^{18}O axis is flipped) implying greater influx of increasingly mantle-like material (εHf) with lesser degrees of supracrustal recycling (∂^{18}O) until post-1.2 Ga whereupon zircons have a more isotopically enriched chemical signature.

at ~1075 Ma with a younger subpeak at ~990 Ma. Also, these successions display two additional peaks at ~1500 Ma and 1650 Ma. Furthermore, in contrast to the syn-orogenic sedimentary successions less than 10% of zircons analyzed from the post-orogenic successions fall between the ~1500 Ma and ~1075 Ma age peaks (n = 21 of 282) and these form two small peaks at ~1240 Ma (n = 13) and ~1330 Ma (n = 8).

The presence of two discrete age peaks during the Grenville Orogeny seen in the samples of the Double Mer Formation further imply multiple magma-generating processes during various stages of collisional orogenesis. The earlier Grenville peak (ca. 1060-1040 Ma), also seen in the Loch Eil Formation of Scotland, correlates with the earliest phase of the Grenville Orogeny (1085-1040 Ma) whereas the younger peak seen in the Double Mer Formation (1000-980 Ma) coincides with the later phase (1010-950 Ma) (phases of Grenville Orogeny after Gower et al., 2008 and references therein). The explanation why the younger age peak is only present in the Double Mer Formation is unclear, for it cannot be attributed to delayed exposure of late-stage magmatic rocks as the Bradore Formation is likely the youngest of the post-orogenic sedimentary successions in Labrador.

Hf and O isotopes in zircon from post-orogenic sedimentary successions display a 'parabolic' pattern wherein εHf values become more depleted and the range of $\partial^{18}O$ values become more restricted near mantle values from ~1800 Ma to ~1200 Ma and vice-versa post-1200 Ma (Fig. 5.9). The pre-1200 Ma pattern can be attributed either to a decrease in reworking of continental crustal or an influx of isotopically depleted, mantle-derived magma until the initiation of collisional orogenesis wherein crustal reworking resumes.

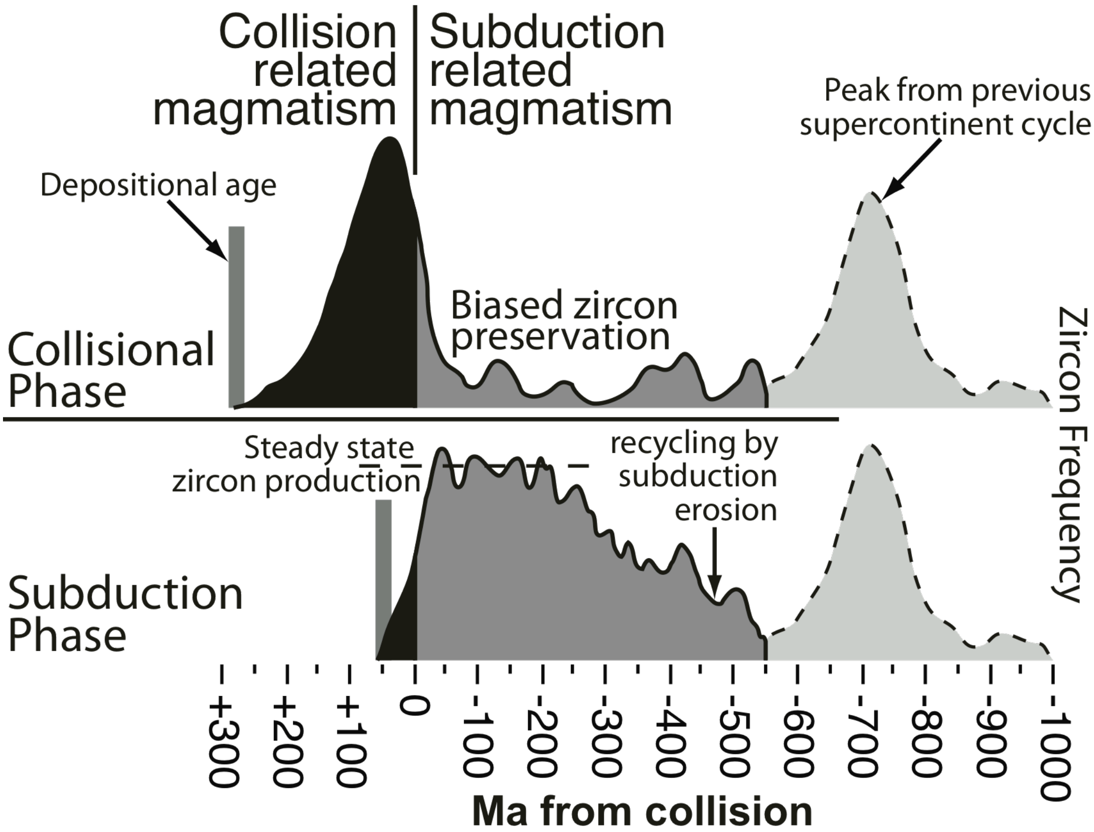

Figure 5.12: The idealized zircon age spectra during the subduction phase displays the age peak associated with the previous supercontinent cycle along with a broad plateau of ages representing steady-state zircon growth during subduction-related magmatism. Subduction erosion continually removes the oldest zircons associated with the phase of the orogenic cycle. This process continues until continental collision (and supercontinent assembly) continues to remove the previously formed subduction zone-derived zircons. Zircons that are formed during collision-related magmatism are preserved within the interior of the recently collided continents thus protecting it from future subduction erosion. This allows for significant temporal perpetuation of the age peak associated with the collisional orogenesis and the assembly of a supercontinent.

The post-1200 Ma zircons from post-orogenic formations are examined in detail in figures 10 and 11. Figure 10a displays the U-Pb age against the εHf value with $\partial^{18}O$ values plotted using a color spectrum for each analysis. From this, no systematic pattern can be observed between the U-Pb age, εHf, and $\partial^{18}O$. This implies that, although the range of $\partial^{18}O$ values increases post-1200 Ma, there is no direct connection between the degree of radiogenic Hf and ^{18}O enrichment (i.e. depleted mantle model age and degree of supracrustal reworking, respectively). In Figure 10b, depleted mantle model ages are plotted along a color spectrum against the U-Pb age and εHf values for each analysis. Depleted mantle model ages generally increase through time with the highest frequency between ~1.65 and 1.5 Ga. This trend likely reflects the assimilation of a greater proportion of older crustal material through time.

Yb/Hf ratios provide additional insight into the geochemical transition from latest stages of subduction-related magmatism (1215-1110 Ma; Chiarnezelli et al., 2010; McLelland et al., 2010) to the early and late collisional phases of the Grenville Orogeny (Gower et al., 2008). The difference between partition coefficients of Yb and Hf in zircon is great enough (Fujimaki, 1986) to show differential element fractionation during fractional crystallization, crustal assimilation, and magma chamber rejuvenation. During fractional crystallization Hf is preferentially incorporated into zircons driving the Yb/Hf ratio of the parent magma up without affecting the εHf value, whereas assimilation of older crustal material will increase the radiogenic Hf ratio (decreasing εHf) leaving the Yb/Hf ratio constant. An influx of depleted mantle material will likewise leave the Yb/Hf ratio unaffected, but will increase the εHf values. In general, the Yb/Hf ratios and εHf values of the pre-collision zircons exhibit a pattern consistent with fractional crystallization of a magmatic system (Fig. 5.11). Zircons attributed to syn-collisional magmatic systems (post-1.1 Ga) show little variation in the Yb/Hf ratios and a significant shift in εHf values during the collisional phases. Additionally, the younger subpeak seen in the U-Pb spectra in post-orogenic sedimentary successions associated with the later phase of the Grenville orogeny is also apparent in the εHf spectra. This implies a shift in the composition of material assimilated into the younger magmatic system (Fig. 5.10). Although an assessment of the geochemical idiosyncrasies within magmatic systems is best characterized by the primary igneous rocks, the evolution of magmatic processes described herewith are consistent with the tectonomagmatic framework previously proposed by various workers (Hynes and Rivers, 2010; McLelland et al., 2010).

Increased Preservation Potential?

The U-Pb age spectra of post-orogenic sedimentary successions show similar age peaks to U-Pb age spectra from sediment in modern rivers throughout the Appalachian region (Eriksson et al., 2003) and the Mississippi River (Iizuka et al., 2005; Wang et al., 2009) (Fig. 5.12a). Also, the εHf and $\partial^{18}O$ values of detrital zircons within the Mississippi River display the same ‘parabolic’ pattern as seen in the post-orogenic sedimentary successions (Fig. 5.12b). It is important to note the modern drainages discussed here are separated from the depositional sites of the Bradore, Double Mer, and Loch Eil formations by thousands of kilometers. Despite this, the similarities in zircon isotopic patterns from modern and Neoproterozoic sediments imply that tectonomagmatic provinces from which these zircons are derived display a peculiar isotopic longevity from their initial formation and preservation in the Laurentian craton to their modern levels of exposure and erosion. It is however unclear when zircons were initially derived from Grenvillian bedrock and to what degree sedimentary reworking has played a part in the current isotopic signals in modern detrital zircons. Rainbird et al. (2012) show that the Grenvillian zircon age peak is also present throughout the western margin of Laurentia from the Grand Canyon in the south to the Mackenzie Mountains in the north. These far-flung regions with a dominant Grenvillian age signature imply detritus initially shed from the Grenville orogenic belt was transported ~4000 km across Laurentia (see also Rainbird et a., 1992; Rainbird et al., 1997; Dehler et al., 2010; Gehrels et al., 2011; Spencer et al., 2012).

The steady state production of zircon during the subduction phase of the orogenic cycle and consequent recycling of subduction-related magmatism is displayed schematically in Figure 13. The collisional phase is characterized by continued (if not enhanced) crustal recycling of previously formed subduction-related magmatic rocks are recycled back into the mantle. This is in contrast to magmatism that occurs during the collisional phase is isolated within the interior of the colliding continents. This protects the collision-related tectonomagmatic belt from the various tectonic processes responsible for recycling of continental crust back to the mantle along the continental margins (i.e. mountain root foundering/delamination, tectonic erosion) (Fig. 5.13). This tectonic isolation of collision-related magmatic rocks leads to a longevity of the detrital zircon isotopic signature associated with the collisional phase of the orogenic cycle. Therefore, the zircon age peak associated with the Grenville Orogeny seen in the modern river sediments of North America is best explained by selective preservation of continental crust during collisional orogenesis (see Hawkesworth et al., 2009). Although, the Grenville zircon age peak is the product of preferential preservation during collisional orogenesis, it is not the latest stage of subduction zone magmatism that is preserved. Rather the age peak associated with the Grenville Orogeny is concurrent with the timing of the orogenic magmatism and peak metamorphism associated with collisional orogenesis. Alternative models that propose an influx of juvenile, isotopically depleted magmatism are inconsistent with the decreasing εHf and increasing $\partial^{18}O$ through time.

The zircon age peak associated with the supercontinent of Rodinia is one of several dominant zircon age peaks found in global compilations of detrital zircon ages in modern sediments (Campbell and Allen, 2008; Iizuka et al., 2010; Hawkesworth et al., 2010). As noted by Spencer et al. (2013c), variation in geodynamic configuration (subduction zone polarity, advancing/retreating continental margins, longevity of subduction zone magmatism, thickness of leading margin sediments, etc.) can dramatically affect the resulting isotopic signature of a particular age peak and potentially the proportions of latest stage subduction-related magmatism versus collision-related magmatism. Despite the geodynamic idiosyncrasies of individual zircon age peaks this study implies that zircon age peaks, which developed in conjunction with supercontinents, are the product of selective crustal preservation during collisional orogenesis.

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Chapter 6 Conclusions

This thesis began with goal to investigate the preservation bias of the supercontinental cycle in various locations along the Rodinia-forming orogenic events. Four localities had been identified that, based upon the current literature preserved the pre-, syn-, and post-orogenic sedimentary successions (Labrador, Scotland, southern Norway, Texas). This would allow for the assessing how the detrital zircon record changed throughout an orogenic cycle. My field work began in Labrador during the summer of 2011 and the successions sampled provided a perfect set to address my initial question. Equally samples from Scotland collected during the autumn of 2011 provided the necessary information.

The samples collected from southern Norway and Texas provided information that further elucidated the regional geology but unfortunately did not provide the necessary sedimentary successions to test my hypothesis. In southern Norway, the Eidsborg Formation was previously though to have been deposited following the Sveconorwegian orogeny, however the detrital zircon dating from in this thesis reveal that it was deposited immediately prior to the orogeny. Likewise in Texas, the Lanoria formation was thought to have been deposited prior to the Grenville orogeny, but our data show it to have been deposited synchronously with the Hazel Formation which was deposited during the orogenic.

Additionally, as I was exploring the implications of global databases, my analysis of Hf isotopes in zircon provided new insight into the relationship of geodynamics and the global response to the oxygenation of the crust and the Sr isotopic signature of the ocean.

The final chapter represents the main focus of the original hypothesis and discusses the formation of the continental crust and the linkages between its distribution and the apparent episodicity of crust-forming geological processes and events. The data obtained during this research has added to the increasing amount of evidence that suggests that the temporal pattern of crust formation, as deduced from sedimentary successions through the Grenville Orogenic cycle does not reflect the processes of periodic enhanced crustal generation, but rather that tectonic recycling processes have imposed a preservational bias that gets archived as an episodic-appearing geologic record. This preferential preservation process is governed by the tectonic isolation of collision-related magmatism during collisional orogenesis, which is likely associated with the assembly of supercontinents. The association of continental collision and crustal preservation bias should guide future study of how we interrogate the geologic record.

There are several uncertainties that remain in our understanding of how to properly draw global inference of geologic processes from a biased record, including:

1. Understanding the total volume of crust. Current methodologies to interrogate the continental crust are reliant on methods that focus predominately on the felsic upper crust. An understanding of the mafic middle and lower crust remain in many aspects terra incognita. Approaches to query the growth of the mafic end member of the continental crust can be developed through the use of lesser used mineral phases (e.g. baddeleyite, eudyialite) and isotopes (e.g. Ca, Mg, Ti) to fill in this crucial gap in our understanding of the continental crust.
2. The onset of modern plate tectonic and the processes of crustal generation prior to this point during early Earth history. Current models for the onset of plate tectonics and Hadean/Archean crustal generation are contentious and not yet resolved, yet in many models over 50% of continental crust was generated before the onset of plate tectonics (e.g. Belousova et al., 2010; Dhuime et al., 2012). Understanding the pre-plate tectonic process of crustal generation are key to creating a whole Earth model for the crustal growth through geologic time.
3. The process and location of crustal recycling. As shown in chapter 1, the geodynamic configuration of supercontinent assembly has a significant impact on the resulting isotopic signature. Further, chapter 4 illustrates how coupling Hf and O isotopes in zircon has enabled the discrimination of supracrustal reworking and intracrustal reworking. The former would exhibit enriched radiogenic Hf and 18O whereas the later would only show enriched radiogenic Hf. Understanding the degree of crustal reworking and the geodynamics associated therewith would allow for greater certainty in crustal growth and evolution models since the onset of plate tectonics.

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Lines 2-6 are the compositions of sedimentary lithologies used in the sedimentary model.

	Submarine Volcanogenics	Continental Extrusives	Sandstones	Shales	Cherts and iron formations	Dolomites	Limestones
Phanerozoic			15‰	15‰	32‰	24‰	25‰
Proterozoic	14‰	6‰	13.5‰	14‰	22‰	21‰	23‰
Archean			13.5‰	13‰	20‰	20‰	22‰
	Eiler, 2001	Eiler, 2001	Arthur et al., 1983; Eiler, 2001	Land and Lynch, 1996; Eiler, 2001	Perry and Lefticariu, 2003	Shields and Veizer, 2002	Shields and Veizer, 2002

Lines 8-54 are the 100 my bins and percentages of each lithology through time from Ronov, 1964.

Ma	Submarine Volcanogenics	Continental Extrusives	Greywackes	Arkose	Quartz sands	Shales	Cherts and iron formations	Dolomites	Limestones
0	16	20	22	28	36	87	90	93	100
100	18	21	24	30	37	82	86	92	100
200	20	23	26	31	39	78	81	92	100
300	21	24	28	33	41	76	78	92	100
400	23	26	30	34	42	75	77	92	100
500	24	27	32	35	43	76	78	92	100
600	26	28	33	37	44	77	81	93	100
700	27	30	34	38	45	79	85	95	100
800	28	31	35	39	45	82	88	96	100
900	29	32	35	40	46	84	90	96	100
1000	29	32	36	41	46	85	91	96	100
1100	30	33	36	41	47	85	91	96	100
1200	30	34	36	42	47	84	91	97	100
1300	31	34	36	43	47	84	91	97	100
1400	31	34	37	44	47	84	92	97	100
1500	31	34	37	44	47	85	93	96	100
1600	31	34	37	45	48	85	95	96	100

1700	32	34	38	45	48	84	96	96	100
1800	32	34	38	46	48	83	95	96	100
1900	32	34	39	46	48	83	96	97	100
2000	32	34	39	47	48	82	96	97	100
2100	32	34	40	47	49	82	96	97	100
2200	32	34	40	47	49	82	96	97	100
2300	33	34	41	48	49	83	96	97	100
2400	33	33	41	48	49	85	96	97	100
2500	33	33	42	48	50	86	96	97	100
2600	33	33	43	49	50	88	96	97	100
2700	34	34	43	49	51	90	96	97	100
2800	34	34	44	50	51	92	96	97	100
2900	35	35	46	51	52	93	96	97	100
3000	35	35	47	51	53	95	96	97	100
3100	36	36	48	52	55	96	96	97	100
3200	37	37	50	53	56	96	96	97	100
3300	39	39	51	54	58	96	96	97	100
3400	40	40	53	55	59	96	96	97	100
3500	42	42	55	57	61	96	96	97	100
3600	44	44	57	58	63	96	96	97	100
3700	47	47	60	60	66	96	96	97	100
3800	49	49	62	62	68	96	96	97	100
3900	52	52	65	65	70	96	96	97	100
4000	56	56	68	68	73	96	96	97	100
4100	59	59	71	71	76	96	96	97	100
4200	64	64	74	74	79	96	96	97	100
4300	69	69	78	78	82	96	96	97	100
4400	76	76	83	83	87	96	96	97	100
4500	85	85	90	90	93	96	96	97	100

Data supplement 10 : Detrital zircon U-Pb data for chapter 5.

Sample	^{204}Pb	^{206}Pb	^{207}Pb	^{238}U	Pbppm	Uppm	^{238}U/^{206}Pb	1s %	^{207}Pb/^{206}Pb	1s %	^{207}Pb/^{235}U	1s %	^{206}Pb/^{238}U	1s %
CS11-1_1	-81	2.2	0.14	15	27	149	5.35	1.02	0.0754	**0.42**	1.9423	1.10	0.1869	1.02
CS11-1_2	-280	2.4	0.15	16	29	158	5.25	1.32	0.0750	**0.40**	1.9676	1.38	0.1904	1.32
CS11-1_3	-32	0.8	0.05	6	10	58	5.87	1.53	0.0709	0.80	1.6640	1.73	0.1703	1.53
CS11-1_4	-78	0.6	0.03	4	7	42	5.94	1.37	0.0702	0.62	1.6279	1.51	0.1683	1.37
CS11-1_5	135	1.1	0.07	8	13	77	5.73	**0.64**	0.0727	1.34	1.7509	1.49	0.1746	**0.64**
CS11-1_6	-36	1.0	0.06	7	12	67	5.44	1.20	0.0751	0.72	1.9034	1.40	0.1838	1.20
CS11-1_7	116	2.4	0.16	16	30	161	5.21	1.51	0.0750	**0.49**	1.9860	1.59	0.1920	1.51
CS11-1_8	**-390**	1.1	0.09	6	14	55	3.79	2.05	0.0930	0.69	3.3821	2.16	0.2638	2.05
CS11-1_9	**307**	1.5	0.10	12	19	121	6.16	1.11	0.0731	**0.43**	1.6356	1.20	0.1623	1.11
CS11-1_10	-61	2.5	0.20	12	30	118	3.77	**0.72**	0.0938	**0.49**	3.4329	0.88	0.2655	**0.72**
CS11-1_11	20	0.5	0.03	4	6	41	6.14	1.05	0.0723	0.75	1.6219	1.29	0.1627	1.05
CS11-1_12	289	2.8	0.23	14	35	134	3.77	1.51	0.0933	**0.35**	3.4125	1.55	0.2653	1.51
CS11-1_13	-26	0.4	0.02	**3**	4	26	5.73	1.38	0.0731	1.16	1.7574	1.80	0.1745	1.38
CS11-1_14	**335**	1.9	0.12	13	23	129	5.40	1.25	0.0755	**0.46**	1.9273	1.33	0.1851	1.25
CS11-1_15	47	0.3	0.02	**2**	4	23	5.84	1.06	0.0726	1.05	1.7147	1.49	0.1713	1.06
CS11-1_16	128	1.7	0.15	8	21	77	3.57	1.22	0.1015	0.57	3.9161	1.35	0.2799	1.22
CS11-1_17	-130	0.8	0.07	4	10	40	3.81	1.57	0.0948	**0.48**	3.4299	1.64	0.2623	1.57
CS11-1_18	-77	0.4	0.03	**3**	5	32	5.95	1.55	0.0747	0.85	1.7319	1.77	0.1681	1.55
CS11-1_19	-194	2.7	0.22	13	34	130	3.77	1.51	0.0931	**0.35**	3.4077	1.55	0.2655	1.51
CS11-1_20	0	0.2	0.01	**2**	3	17	6.19	1.61	0.0742	1.50	1.6515	2.21	0.1614	1.61
CS11-1_21	133	0.5	0.04	**4**	7	37	5.56	1.56	0.0750	1.36	1.8615	2.07	0.1799	1.56
CS11-1_22	226	3.1	0.25	15	38	147	3.79	1.18	0.0933	**0.39**	3.3977	1.24	0.2641	1.18
CS11-1_23	12	0.1	**0.01**	**1**	2	11	6.16	1.79	0.0698	1.60	1.5629	2.40	0.1623	1.79
CS11-1_24	-16	3.0	0.24	14	37	140	3.69	1.70	0.0934	0.52	3.4914	1.78	0.2712	1.70
CS11-1_25	-107	0.9	0.06	7	11	67	5.67	1.19	0.0755	0.97	1.8359	1.54	0.1764	1.19
CS11-1_26	80	0.4	0.02	**3**	4	25	5.61	2.64	0.0738	0.79	1.8146	2.75	0.1784	2.64
CS11-1_27	39	0.3	0.02	**2**	4	25	6.14	2.34	0.0723	0.51	1.6233	2.39	0.1629	2.34
CS11-1_28	**-355**	1.1	0.08	7	13	64	4.68	1.55	0.0818	**0.34**	2.4097	1.59	0.2136	1.55
CS11-1_29	104	0.3	0.02	**3**	4	28	6.22	1.43	0.0722	1.54	1.6010	2.11	0.1609	1.43
CS11-1_30	-142	0.2	0.01	**2**	3	17	6.25	1.69	0.0709	0.76	1.5637	1.85	0.1599	1.69
CS11-1_31	35	0.1	**0.01**	**1**	2	10	6.15	1.11	0.0732	2.34	1.6410	2.59	0.1626	1.11
CS11-1_32	-103	0.7	0.04	5	8	49	5.91	1.42	0.0744	**0.38**	1.7359	1.47	0.1692	1.42

CS11-1_33	12	1.6	0.13	8	20	80	3.85	2.47	0.0936	0.51	3.3530	2.52	0.2597	2.47
CS11-1_34	48	3.5	0.25	21	43	209	4.66	1.87	0.0827	**0.30**	2.4463	1.89	0.2144	1.87
CS11-1_35	-69	0.1	**0.01**	**1**	2	9	4.98	1.65	0.0813	1.86	2.2507	2.49	0.2009	1.65
CS11-1_36	82	5.3	0.45	31	65	301	4.41	3.13	0.0981	0.63	3.0668	3.20	0.2268	3.13
CS11-1_37	-28	0.7	0.06	**4**	9	35	3.91	2.70	0.0937	0.68	3.3042	2.78	0.2556	2.70
CS11-1_38	267	2.5	0.20	13	31	125	3.92	1.96	0.0937	**0.41**	3.2988	2.00	0.2554	1.96
CS11-1_39	191	1.2	0.08	10	15	95	6.13	1.78	0.0722	**0.50**	1.6238	1.85	0.1631	1.78
CS11-1_40	30	1.4	0.10	11	17	113	6.58	1.65	0.0833	1.23	1.7464	2.05	0.1521	1.65
CS11-1_41	72	0.3	0.02	**2**	3	20	5.68	1.14	0.0722	1.27	1.7512	1.71	0.1759	1.14
CS11-1_42	-266	0.3	0.02	**2**	3	21	6.16	1.73	0.0715	1.04	1.6007	2.01	0.1624	1.73
CS11-1_43	5	0.3	0.02	**2**	3	20	5.98	1.68	0.0706	1.33	1.6276	2.14	0.1673	1.68
CS11-1_44	27	1.1	0.07	8	13	82	5.94	1.61	0.0709	0.73	1.6475	1.77	0.1684	1.61
CS11-1_45	123	0.1	**0.01**	**1**	1	9	6.09	2.13	0.0701	1.59	1.5867	2.66	0.1642	2.13
CS11-1_46	92	2.3	0.14	17	28	171	5.81	1.40	0.0720	0.76	1.7078	1.59	0.1721	1.40
CS11-1_47	-208	0.1	**0.01**	**1**	1	6	5.25	3.04	0.0761	1.73	2.0011	3.50	0.1906	3.04
CS11-1_48	233	3.5	0.28	17	43	165	3.74	1.57	0.0929	**0.35**	3.4220	1.61	0.2672	1.57
CS11-1_49	-70	0.1	**0.01**	**1**	1	9	6.15	1.17	0.0769	2.74	1.7222	2.98	0.1625	1.17
CS11-1_50	-112	0.1	**0.00**	**0**	1	5	6.16	1.42	0.0661	2.43	1.4795	2.82	0.1622	1.42
CS11-1_51	-25	0.1	**0.01**	**1**	1	9	6.25	1.44	0.0697	1.40	1.5373	2.01	0.1600	1.44
CS11-1_52	-46	1.7	0.14	9	21	86	3.88	1.05	0.0936	**0.37**	3.3236	1.12	0.2576	1.05
CS11-1_53	79	0.7	0.05	5	9	49	5.45	1.37	0.0735	0.50	1.8581	1.46	0.1833	1.37
CS11-1_54	47	0.2	0.01	**2**	3	16	5.65	1.36	0.0744	0.96	1.8147	1.67	0.1769	1.36
CS11-1_55	72	1.1	0.08	5	13	51	3.80	**0.62**	0.0929	0.52	3.3726	0.80	0.2634	**0.62**
CS11-1_56	-201	1.9	0.13	13	24	131	5.35	1.29	0.0754	**0.36**	1.9415	1.34	0.1868	1.29
CS11-1_57	-184	0.1	**0.01**	**1**	2	11	6.04	1.57	0.0721	1.96	1.6447	2.51	0.1655	1.57
CS11-1_58	-32	1.1	0.07	8	14	77	5.46	1.64	0.0751	0.56	1.8975	1.73	0.1833	1.64
CS11-1_60	-172	1.5	0.10	10	18	101	5.37	1.51	0.0750	**0.46**	1.9277	1.57	0.1864	1.51
CS11-1_62	-165	0.4	0.03	**2**	5	23	4.80	1.78	0.0810	1.14	2.3244	2.11	0.2082	1.78
CS11-1_63	12	1.1	0.07	8	14	77	5.41	0.98	0.0748	**0.50**	1.9074	1.10	0.1849	0.98
CS11-1_64	125	4.2	0.34	20	52	196	3.62	1.13	0.0933	**0.39**	3.5502	1.19	0.2761	1.13
CS11-1_65	207	0.6	0.04	5	8	45	5.51	1.60	0.0760	0.63	1.9028	1.72	0.1816	1.60
CS11-1_66	**-409**	1.9	0.16	10	23	94	3.88	1.63	0.0948	**0.43**	3.3720	1.69	0.2579	1.63

CS11-1_67	**-306**	0.4	0.03	**3**	5	29	5.59	1.68	0.0731	1.11	1.8031	2.01	0.1789	1.68
CS11-1_68	124	0.6	0.04	4	7	41	5.47	1.64	0.0768	0.81	1.9358	1.83	0.1828	1.64
CS11-1_69	129	0.8	0.05	6	10	55	5.46	1.69	0.0753	0.71	1.9023	1.84	0.1833	1.69
CS11-1_70	-161	1.2	0.10	6	15	63	4.01	2.01	0.0948	**0.48**	3.2619	2.06	0.2496	2.01
CS11-1_70	-161	1.2	0.10	6	15	63	4.01	2.01	0.0948	**0.48**	3.2616	2.06	0.2496	2.01
CS11-1_71	-141	0.1	**0.01**	**1**	1	7	6.12	2.08	0.0716	3.78	1.6133	4.31	0.1633	2.08
CS11-1_72	64	0.5	0.03	4	6	39	6.08	1.52	0.0698	0.76	1.5836	1.70	0.1645	1.52
CS11-1_73	61	3.4	0.27	16	42	158	3.67	1.65	0.0938	**0.33**	3.5230	1.69	0.2725	1.65
CS11-1_74	-109	2.3	0.19	11	28	107	3.71	1.34	0.0961	**0.49**	3.5751	1.42	0.2698	1.34
CS11-1_75	-129	1.0	0.06	7	12	67	5.48	1.15	0.0751	0.52	1.8891	1.27	0.1825	1.15
CS11-1_76	105	0.1	**0.01**	**1**	2	11	6.24	0.88	0.0708	2.56	1.5652	2.70	0.1604	0.88
CS11-1_77	103	0.6	0.05	**3**	8	32	4.01	1.45	0.0935	**0.50**	3.2188	1.53	0.2497	1.45
CS11-1_78	95	0.7	0.05	5	9	49	5.30	1.28	0.0764	0.84	1.9875	1.53	0.1886	1.28
CS11-1_78	95	0.7	0.05	5	9	49	5.30	1.28	0.0764	0.84	1.9874	1.53	0.1885	1.28
CS11-1_79	-165	0.4	0.02	**3**	4	27	6.05	1.64	0.0726	1.40	1.6550	2.15	0.1653	1.64
CS11-1_80	-46	0.6	0.04	4	7	41	5.51	1.71	0.0754	0.77	1.8872	1.88	0.1815	1.71
CS11-1_81	232	1.1	0.10	5	14	50	3.48	1.08	0.0997	0.52	3.9490	1.20	0.2873	1.08
CS11-1_82	48	3.7	0.24	24	45	238	5.16	1.34	0.0766	**0.42**	2.0483	1.41	0.1939	1.34
CS11-1_83	**374**	1.4	0.11	7	17	69	3.86	1.70	0.0928	**0.28**	3.3164	1.72	0.2592	1.70
CS11-1_84	239	0.6	0.04	5	8	47	5.98	1.26	0.0714	0.54	1.6443	1.37	0.1671	1.26
CS11-1_85	-52	0.1	**0.01**	**1**	2	11	6.24	2.43	0.0684	2.06	1.5116	3.19	0.1603	2.43
CS11-1_86	38	0.2	0.01	**2**	3	16	6.17	1.48	0.0685	1.48	1.5318	2.10	0.1621	1.48
CS11-1_87	38	1.1	0.07	8	13	79	5.54	2.22	0.0740	0.66	1.8412	2.31	0.1805	2.22
CS11-1_89	-53	1.0	0.06	8	12	75	6.16	1.79	0.0710	0.98	1.5895	2.04	0.1623	1.79
CS11-1_90	22	0.5	0.04	**4**	7	38	5.55	1.72	0.0768	0.54	1.9084	1.81	0.1803	1.72
CS11-1_91	233	0.6	0.04	**4**	7	39	5.54	1.50	0.0736	**0.42**	1.8332	1.56	0.1806	1.50
CS11-1_92	-38	0.2	0.01	**2**	3	20	6.27	1.57	0.0688	1.30	1.5138	2.04	0.1596	1.57
CS11-1_93	**402**	1.1	0.08	7	14	69	4.80	2.07	0.0817	0.63	2.3446	2.16	0.2081	2.07
CS11-1_94	-106	0.6	0.04	4	7	43	5.64	2.20	0.0742	**0.50**	1.8131	2.26	0.1772	2.20
CS11-1_95	288	0.3	0.02	**2**	4	24	6.22	1.43	0.0709	1.16	1.5716	1.84	0.1608	1.43
CS11-1_96	33	0.2	0.01	**2**	3	17	6.20	1.37	0.0686	1.28	1.5257	1.87	0.1613	1.37
CS11-1_97	-163	2.0	0.13	15	25	149	5.74	1.95	0.0744	0.61	1.7864	2.05	0.1742	1.95

CS11-1_98	117	2.3	0.19	11	28	112	3.83	1.80	0.0935	**0.47**	3.3641	1.86	0.2609	1.80
CS11-1_99	-59	2.7	0.18	19	33	186	5.45	1.85	0.0761	**0.47**	1.9259	1.91	0.1836	1.85
CS11-1_99	24	0.5	0.03	**3**	6	29	4.88	1.32	0.0816	0.57	2.3046	1.44	0.2049	1.32
CS11-1_100	237	2.9	0.24	15	35	144	3.93	1.38	0.0944	**0.47**	3.3121	1.45	0.2546	1.38
CS11-3_1	172.7	0.465	0.029	**3.863**	7	44	6.27	1.25794	0.0720	0.91	1.5826	1.5528	0.1595	1.2579
CS11-3_2	-57.83	0.038	**0.002**	**0.284**	1	3	5.42	5.4226	0.0673	6.55	1.7106	8.5003	0.1844	5.4226
CS11-3_3	5.445	1.934	0.156	9.848	30	113	3.78	1.17581	0.0935	0.53	3.4117	1.2909	0.2646	1.1758
CS11-3_4	145.1	1.373	0.097	8.683	21	100	4.74	1.85238	0.0820	0.56	2.3832	1.9349	0.2108	1.8524
CS11-3_5	-172.5	0.843	0.052	6.828	13	79	6.09	1.70778	0.0719	1.29	1.6278	2.1405	0.1642	1.7078
CS11-3_6	67.79	0.526	0.032	4.347	8	50	6.24	1.37679	0.0709	1.00	1.5664	1.7044	0.1602	1.3768
CS11-3_7	-25.18	0.185	0.012	**1.349**	3	16	5.48	2.14097	0.0753	0.60	1.8940	2.2232	0.1824	2.141
CS11-3_8	-281.2	3.293	0.267	16.61	51	191	3.82	1.45625	0.0939	**0.40**	3.3858	1.5095	0.2616	1.4563
CS11-3_9	**-343.8**	0.579	0.039	4.271	9	49	5.57	1.22989	0.0770	0.55	1.9048	1.3486	0.1795	1.2299
CS11-3_10	-116.1	0.114	**0.007**	**0.951**	2	11	6.32	1.01591	0.0677	1.79	1.4764	2.0592	0.1583	1.0159
CS11-3_11	-43.77	0.369	0.024	**2.755**	6	32	5.61	1.74324	0.0764	0.81	1.8762	1.923	0.1781	1.7432
CS11-3_15	-12.33	0.051	**0.003**	**0.43**	1	5	6.22	3.48463	0.0688	5.38	1.5248	6.4139	0.1608	3.4846
CS11-3_16	149.6	0.638	0.043	4.691	10	54	5.52	1.3281	0.0758	0.51	1.8949	1.4239	0.1812	1.3281
CS11-3_17	**383.1**	1.129	0.1	5.445	18	63	3.57	1.46725	0.1008	0.65	3.8935	1.603	0.2801	1.4672
CS11-3_18	-159.7	0.232	0.014	**1.945**	4	22	6.33	1.1442	0.0711	0.96	1.5477	1.4946	0.1579	1.1442
CS11-3_19	77.56	0.918	0.081	4.263	14	49	3.50	0.81225	0.1020	0.52	4.0131	0.9621	0.2853	0.8123
CS11-3_20	276.7	2.28	0.161	14.06	36	162	4.61	1.61793	0.0817	**0.46**	2.4417	1.6833	0.2167	1.6179
CS11-3_21	287	0.158	**0.01**	**1.325**	2	15	6.20	0.93474	0.0710	1.13	1.5802	1.4639	0.1614	0.9347
CS11-3_22	84.06	0.347	0.022	**2.898**	5	33	6.21	1.92867	0.0721	1.82	1.5991	2.6528	0.1609	1.9287
CS11-3_23	8.997	0.472	0.035	**2.991**	7	34	4.74	1.75738	0.0850	1.02	2.4723	2.0315	0.2109	1.7574
CS11-3_24	232.1	1.145	0.101	5.278	18	61	3.45	1.62554	0.1025	**0.32**	4.0925	1.6574	0.2897	1.6255
CS11-3_25	-27.01	1.954	0.172	8.903	30	102	3.40	1.73591	0.1019	**0.46**	4.1358	1.7951	0.2943	1.7359
CS11-3_26	167.7	0.643	0.039	5.172	10	60	6.13	1.35169	0.0724	0.67	1.6281	1.5088	0.1632	1.3517
CS11-3_27	5.289	0.711	0.047	5.225	11	60	5.51	2.03997	0.0769	0.57	1.9248	2.1169	0.1816	2.04
CS11-3_28	21.55	0.919	0.062	7.187	14	83	5.69	1.99387	0.0769	0.73	1.8632	2.1244	0.1758	1.9939
CS11-3_29	193.6	2.738	0.243	12.44	43	143	3.36	1.81956	0.1026	**0.41**	4.2028	1.8646	0.2972	1.8196
CS11-3_.30	**389**	1.235	0.101	6.351	19	73	3.82	1.83848	0.0949	**0.39**	3.4203	1.8787	0.2615	1.8385
CS11-3_31	273.8	1.551	0.137	7.215	24	83	3.47	1.73777	0.1018	**0.34**	4.0449	1.7701	0.2882	1.7378

CS11-3_32	**381.8**	0.152	**0.009**	**1.267**	2	15	6.21	1.86583	0.0719	1.06	1.5966	2.1454	0.1610	1.8658
CS11-3_33	202.3	0.868	0.057	6.493	14	75	5.61	1.57425	0.0765	0.59	1.8804	1.6816	0.1782	1.5742
CS11-3_34	**-301.9**	0.954	0.059	7.92	15	91	6.17	1.54698	0.0717	0.51	1.6010	1.6294	0.1619	1.547
CS11-3_35	**-343.2**	0.363	0.032	**1.645**	6	19	3.44	2.1017	0.1014	0.99	4.0618	2.3227	0.2906	2.1017
CS11-3_36	104.3	1.605	0.108	11.51	25	132	5.33	1.49532	0.0779	0.59	2.0164	1.609	0.1877	1.4953
CS11-3_37	224.2	4.795	0.422	21.79	75	251	3.36	1.68077	0.1016	**0.30**	4.1736	1.7075	0.2980	1.6808
CS11-3_38	-197.5	0.066	**0.004**	**0.558**	1	6	6.22	3.17599	0.0674	2.53	1.4930	4.0635	0.1607	3.176
CS11-3_39	-96.33	5.839	0.475	29.5	91	340	3.68	0.88969	0.0942	**0.32**	3.5259	0.9459	0.2715	0.8897
CS11-3_40	-203.1	0.244	0.015	**2.006**	4	23	6.22	1.99393	0.0703	1.19	1.5565	2.3239	0.1607	1.9939
CS11-3_41	-76.97	0.282	0.017	**2.433**	4	28	6.41	1.02969	0.0706	0.76	1.5200	1.2823	0.1561	1.0297
CS11-3_42	200.1	1.015	0.063	8.324	16	96	6.16	1.35892	0.0729	0.63	1.6311	1.4971	0.1623	1.3589
CS11-3_43	-87.14	0.136	**0.008**	**1.186**	2	14	6.42	2.12194	0.0696	1.74	1.4951	2.7448	0.1557	2.1219
CS11-3_44	7.128	1.07	0.071	7.864	17	91	5.44	1.36324	0.0770	0.62	1.9519	1.4992	0.1839	1.3632
CS11-3_45	17.65	0.754	0.049	5.643	12	65	5.56	1.66968	0.0750	0.68	1.8603	1.801	0.1800	1.6697
CS11-3_46	-96.63	0.606	0.039	4.605	9	53	5.65	1.92193	0.0752	0.90	1.8362	2.1222	0.1771	1.9219
CS11-3_47	-98.86	0.283	0.019	**2.034**	4	23	5.34	2.08547	0.0760	1.34	1.9615	2.4786	0.1872	2.0855
CS11-3_48	83.85	0.222	0.014	**1.681**	3	19	5.68	1.76512	0.0742	2.04	1.7987	2.6961	0.1759	1.7651
CS11-3_49	-127.5	2.728	0.181	20.13	43	232	5.49	1.37503	0.0769	**0.33**	1.9333	1.4149	0.1823	1.375
CS11-3_50	144.2	0.051	**0.004**	**0.413**	1	5	5.93	4.98415	0.0853	4.81	1.9833	6.9274	0.1686	4.9841
CS11-3_51	191.5	1.133	0.075	8.254	18	95	5.40	1.73171	0.0767	**0.48**	1.9584	1.7957	0.1851	1.7317
CS11-3_52	-172.5	0.715	0.063	**3.348**	11	39	3.48	2.19583	0.1011	0.55	4.0049	2.2646	0.2872	2.1958
CS11-3_53	-146.9	0.925	0.081	4.247	14	49	3.46	1.49204	0.1017	0.84	4.0518	1.7142	0.2888	1.492
CS11-3_54	158.9	0.499	0.04	**2.621**	8	30	3.88	0.85836	0.0932	1.21	3.3157	1.4808	0.2581	0.8584
CS11-3_55	52.83	1.332	0.087	9.731	21	112	5.38	1.13512	0.0757	**0.46**	1.9397	1.2238	0.1857	1.1351
CS11-3_56	219.2	1.702	0.121	10.85	27	125	4.68	1.21969	0.0825	0.77	2.4333	1.4419	0.2139	1.2197
CS11-3_57	-202.2	0.319	0.021	**2.358**	5	27	5.44	1.09335	0.0751	1.04	1.9023	1.5106	0.1837	1.0934
CS11-3_58	-119.2	1.908	0.126	13.85	30	159	5.24	1.26233	0.0765	**0.47**	2.0106	1.3453	0.1907	1.2623
CS11-3_59	-5.913	0.295	0.02	**2.617**	5	30	6.67	1.47143	0.0770	0.97	1.5913	1.7612	0.1499	1.4714
CS11-3_60	30.41	0.286	0.019	**2.119**	4	24	5.47	1.53402	0.0770	1.45	1.9427	2.1107	0.1829	1.534
CS11-3_61	-237.8	1.416	0.116	7.217	22	83	3.77	1.17234	0.0947	**0.47**	3.4650	1.2641	0.2654	1.1723
CS11-3_62	-3.318	0.264	0.017	**2.181**	4	25	6.07	1.27828	0.0743	0.83	1.6872	1.5257	0.1648	1.2783
CS11-3_63	**321.7**	1.134	0.093	5.864	18	68	3.82	1.07488	0.0948	0.58	3.4192	1.2232	0.2616	1.0749

CS11-3_64	101	1.641	0.144	8.044	26	93	3.61	1.70015	0.1018	**0.50**	3.8864	1.772	0.2769	1.7002
CS11-3_65	250.2	0.048	**0.003**	**0.402**	1	5	6.29	0.94882	0.0713	2.96	1.5626	3.105	0.1590	0.9488
CS11-3_67	12.95	1.018	0.063	8.51	16	98	6.12	1.41147	0.0719	0.69	1.6193	1.5698	0.1634	1.4115
CS11-3_68	55.64	0.284	0.019	**2.131**	4	25	5.58	1.00993	0.0770	0.84	1.9021	1.3155	0.1791	1.0099
CS11-3_69	181.1	5.058	0.418	25.05	79	288	3.62	2.13927	0.0956	**0.35**	3.6389	2.1684	0.2761	2.1393
CS11-3_70	-39.87	0.113	**0.007**	**0.953**	2	11	6.29	1.07317	0.0715	1.41	1.5677	1.7701	0.1591	1.0732
CS11-3_71	**-385.2**	0.309	0.02	**2.614**	5	30	6.30	0.76205	0.0732	1.27	1.6033	1.4794	0.1588	0.7621
CS11-3_72	120.4	0.138	**0.008**	**1.174**	2	14	6.35	0.95744	0.0700	1.45	1.5212	1.7372	0.1575	0.9574
CS11-3_73	120.4	0.138	**0.008**	**1.174**	2	14	6.35	0.95736	0.0700	1.45	1.5213	1.7372	0.1575	0.9574
CS11-3_74	59.3	0.909	0.06	6.596	14	76	5.33	1.76234	0.0763	0.68	1.9739	1.8878	0.1876	1.7623
CS11-3_75	-264	4.124	0.257	33.4	64	384	6.02	1.50846	0.0722	**0.46**	1.6533	1.5775	0.1661	1.5085
CS11-3_76	77.45	1.371	0.121	6.463	21	74	3.45	2.4878	0.1019	**0.39**	4.0709	2.5188	0.2896	2.4878
CS11-18_1	34.27	0.642	0.042	5.245	10	60	5.76	1.50026	0.0760	0.73	1.8209	1.6676	0.1737	1.5003
CS11-18_2	63.94	3.24	0.302	14.76	51	170	3.20	1.25137	0.1078	**0.47**	4.6464	1.337	0.3127	1.2514
CS11-18_3	113.9	1.079	0.103	4.817	17	55	3.20	1.44309	0.1102	0.64	4.7510	1.5788	0.3126	1.4431
CS11-18_4	-16.29	4.51	0.715	12.71	70	146	1.97	2.96276	0.1834	**0.30**	12.8088	2.9784	0.5066	2.9628
CS11-18_5	135.7	1.973	0.187	8.997	31	104	3.19	2.20104	0.1096	**0.49**	4.7408	2.2546	0.3138	2.201
CS11-18_6	**520.1**	8.062	0.76	40.91	126	471	3.51	2.45854	0.1093	**0.28**	4.2954	2.4741	0.2850	2.4585
CS11-18_7	44.24	6.509	0.632	27.14	102	312	2.97	1.22382	0.1125	**0.42**	5.2132	1.294	0.3361	1.2238
CS11-18_8	-1.019	1.262	0.129	5.238	20	60	2.98	2.71818	0.1181	**0.43**	5.4552	2.7527	0.3350	2.7182
CS11-18_9	153.6	1.695	0.164	7.592	26	87	3.13	0.78803	0.1107	**0.47**	4.8809	0.9173	0.3198	0.788
CS11-18_10	-49.49	7.061	0.683	30.18	110	347	3.07	2.18004	0.1118	**0.34**	5.0247	2.2057	0.3260	2.18
CS11-18_11	-134.8	2.925	0.279	13.1	46	151	3.12	2.05957	0.1102	**0.43**	4.8742	2.1047	0.3208	2.0596
CS11-18_12	44.21	4.297	0.41	18.95	67	218	3.07	2.73772	0.1104	**0.35**	4.9534	2.76	0.3253	2.7377
CS11-18_13	173.4	4.564	0.436	19.97	71	230	3.04	1.61496	0.1106	**0.32**	5.0121	1.6463	0.3288	1.615
CS11-18_14	**555.8**	5.472	0.886	15.21	85	175	1.94	2.33182	0.1874	**0.35**	13.3100	2.3586	0.5151	2.3318
CS11-18_15	103.6	1.688	0.267	4.948	26	57	2.05	1.74496	0.1836	**0.31**	12.3541	1.7719	0.4879	1.745
CS11-18_16	105.9	2.017	0.195	9.136	31	105	3.15	2.68213	0.1116	**0.33**	4.8815	2.7023	0.3171	2.6821
CS11-18_17	-97.46	2.319	0.22	10.32	36	119	3.15	1.38933	0.1095	**0.46**	4.7958	1.4628	0.3175	1.3893
CS11-18_18	-60.58	7.494	0.721	32.15	117	370	3.00	1.86073	0.1114	**0.33**	5.1238	1.8898	0.3337	1.8607
CS11-18_19	78.32	1.276	0.124	6.077	20	70	3.30	1.51911	0.1112	0.74	4.6545	1.688	0.3035	1.5191
CS11-18_20	-84.8	4.372	0.418	19.35	68	223	3.06	0.95237	0.1107	**0.36**	4.9967	1.0166	0.3273	0.9524

CS11-18_21	-206.6	7.458	0.718	32.77	116	377	3.06	1.38108	0.1114	**0.32**	5.0173	1.4173	0.3267	1.3811
CS11-18_22	298.1	5.811	0.546	27.29	91	314	3.28	1.51175	0.1088	**0.48**	4.5730	1.5872	0.3050	1.5117
CS11-18_23	**-428.9**	4.783	0.766	13.39	75	154	1.95	1.23165	0.1852	**0.35**	13.1044	1.2811	0.5132	1.2317
CS11-18_24	10.05	4.882	0.468	22	76	253	3.14	1.01077	0.1112	**0.31**	4.8798	1.0582	0.3182	1.0108
CS11-18_25	**-373.8**	13.16	1.229	73.39	205	845	3.86	1.93483	0.1081	**0.31**	3.8572	1.9597	0.2588	1.9348
CS11-18_26	**-345.9**	1.706	0.162	7.933	27	91	3.16	1.36404	0.1104	**0.33**	4.8097	1.4023	0.3161	1.364
CS11-18_27	-59.35	5.941	0.908	18.02	93	207	2.11	1.54519	0.1769	**0.31**	11.5472	1.5751	0.4734	1.5452
CS11-18_28	-34.27	12.17	1.154	65.26	190	751	3.73	1.12467	0.1098	**0.35**	4.0547	1.1781	0.2678	1.1247
CS11-18_29	-246.2	1.086	0.103	5.034	17	58	3.23	1.19778	0.1097	0.65	4.6884	1.3635	0.3100	1.1978
CS11-18_30	-139.6	0.327	0.031	**1.521**	5	18	3.27	**0.72679**	0.1097	0.58	4.6221	0.9278	0.3056	**0.7268**
CS11-18_32	-236.1	1.969	0.188	8.675	31	100	3.07	1.62878	0.1108	**0.40**	4.9783	1.6762	0.3260	1.6288
CS11-18_33	-86.56	0.416	0.038	**2.004**	6	23	3.36	1.01307	0.1055	0.60	4.3281	1.1795	0.2976	1.0131
CS11-18_34	-213	7.266	0.691	35.28	113	406	3.36	2.41822	0.1098	**0.28**	4.5098	2.4349	0.2980	2.4182
CS11-18_35	-290.6	2.733	0.256	12.28	43	141	3.13	1.38079	0.1085	**0.33**	4.7776	1.4192	0.3195	1.3808
CS11-18_36	-141.8	3.488	0.539	9.957	54	115	1.99	1.61161	0.1792	**0.31**	12.4418	1.6412	0.5036	1.6116
CS11-18_37	-221.5	4.259	0.395	19.32	66	222	3.16	1.6151	0.1073	**0.27**	4.6821	1.6375	0.3164	1.6151
CS11-18_38	-119.5	7.908	1.27	22.54	123	260	1.98	1.21164	0.1860	**0.33**	12.9572	1.2557	0.5052	1.2116
CS11-18_39	27.6	7.374	1.177	20.53	115	236	1.93	1.49184	0.1844	**0.38**	13.1550	1.5387	0.5173	1.4918
CS11-18_40	**-450.2**	3.301	0.313	14.42	52	166	3.04	1.09738	0.1097	**0.33**	4.9845	1.1448	0.3294	1.0974
CS11-18_41	-40.92	4.663	0.638	14.5	73	167	2.20	1.08151	0.1582	**0.36**	9.9282	1.1399	0.4550	1.0815
CS11-18_42	-93.78	3.396	0.319	14.89	53	171	3.06	2.29932	0.1090	**0.30**	4.9091	2.3194	0.3265	2.2993
CS11-18_43	-208.5	2.82	0.266	13.01	44	150	3.21	1.67269	0.1091	**0.35**	4.6854	1.708	0.3114	1.6727
CS11-18_44	290	2.976	0.458	8.48	46	98	1.98	2.37912	0.1779	**0.45**	12.3860	2.4208	0.5048	2.3791
CS11-18_45	**351**	7.238	0.725	32.74	113	377	3.12	2.81097	0.1159	0.90	5.1207	2.951	0.3204	2.811
CS11-18_46	-231.5	4.845	0.464	22.77	76	262	3.26	1.01575	0.1105	**0.27**	4.6744	1.0517	0.3067	1.0158
CS11-18_47	-98.25	5.185	0.795	15.47	81	178	2.06	2.47727	0.1775	**0.40**	11.8640	2.5098	0.4848	2.4773
CS11-18_48	133.3	5.009	0.773	14.41	78	166	1.96	1.2178	0.1822	**0.30**	12.8307	1.2541	0.5108	1.2178
CS11-18_49	-166.7	7.166	1.08	21.28	112	245	2.02	3.03889	0.1744	**0.31**	11.8781	3.055	0.4939	3.0389
CS11-18_50	-153.6	4.582	0.68	13.93	71	160	2.11	1.47703	0.1719	**0.30**	11.2592	1.5075	0.4750	1.477
CS11-18_51	-198.1	2.233	0.214	10.11	35	116	3.13	2.19475	0.1095	0.53	4.8186	2.2575	0.3193	2.1948
CS11-18_52	-52.84	10.26	1	45.98	160	529	3.10	2.13794	0.1128	**0.33**	5.0265	2.1639	0.3231	2.1379
CS11-18_53	-119.3	4.027	0.663	10.82	63	125	1.86	2.22925	0.1905	**0.36**	14.1528	2.2579	0.5388	2.2293

CS11-18_54	-16.3	1.332	0.125	6.024	21	69	3.13	2.5683	0.1087	0.53	4.7888	2.6227	0.3195	2.5683
CS11-18_55	105.7	2.542	0.247	11.96	40	138	3.22	2.12939	0.1125	**0.38**	4.8148	2.1628	0.3103	2.1294
CS11-18_56	12.41	2.462	0.232	11.05	38	127	3.11	1.80816	0.1090	**0.30**	4.8300	1.8337	0.3213	1.8082
CS11-18_57	-198.7	1.409	0.133	6.504	22	75	3.12	2.24564	0.1090	0.57	4.8248	2.3172	0.3209	2.2456
CS11-18_58	**-468.3**	2.731	0.258	12.26	43	141	3.09	4.32846	0.1091	0.62	4.8653	4.3728	0.3235	4.3285
CS11-18_59	-29.71	2.621	0.249	11.72	41	135	3.07	3.07529	0.1101	**0.49**	4.9372	3.1136	0.3253	3.0753
CS11-18_60	-151.6	3.389	0.321	14.97	53	172	3.05	2.2291	0.1098	**0.43**	4.9632	2.2696	0.3278	2.2291
CS11-18_61	-88.84	3.738	0.354	16.79	58	193	3.17	1.01966	0.1094	**0.36**	4.7548	1.0828	0.3154	1.0197
CS11-18_62	**776.1**	3.974	0.398	48.07	62	553	8.36	1.92589	0.1159	0.82	1.9107	2.0948	0.1196	1.9259
CS11-18_63	**327.9**	2.339	0.382	6.91	36	80	2.04	1.55325	0.1858	**0.42**	12.5627	1.6094	0.4903	1.5533
CS11-18_64	89.08	3.015	0.482	8.381	47	96	1.93	1.17886	0.1850	**0.35**	13.2454	1.2283	0.5193	1.1789
CS11-18_65	-53.13	4.396	0.725	12.3	69	142	1.90	1.33306	0.1907	**0.29**	13.8453	1.3642	0.5266	1.3331
CS11-18_66	234.2	2.36	0.381	6.575	37	76	1.92	2.30702	0.1867	**0.38**	13.4006	2.3385	0.5206	2.307
CS11-18_67	-280.9	9.247	1.481	26.27	144	302	1.93	2.32013	0.1853	**0.30**	13.2255	2.3392	0.5177	2.3201
CS11-18_68	-200.6	3.806	0.348	17.68	59	204	3.19	1.9138	0.1059	**0.38**	4.5852	1.9507	0.3139	1.9138
CS11-18_69	-27.57	2.688	0.254	11.91	42	137	3.06	2.44723	0.1095	**0.29**	4.9381	2.4649	0.3272	2.4472
CS11-18_70	**-310.4**	5.155	0.493	23.31	80	268	3.11	2.27177	0.1105	**0.31**	4.9010	2.2926	0.3216	2.2718
CS11-18_71	-166.9	10.63	1.008	48.79	166	562	3.09	1.88497	0.1097	**0.35**	4.9004	1.9174	0.3241	1.885
CS11-18_72	-3.694	8.291	1.489	20.75	129	239	1.79	1.33126	0.2165	**0.43**	16.6370	1.4005	0.5574	1.3313
CS11-18_73	243.8	5.1	0.887	13.25	80	152	1.79	1.61685	0.2011	**0.30**	15.4636	1.6438	0.5577	1.6168
CS11-18_74	-108.9	3.121	0.296	14.36	49	165	3.15	1.7027	0.1096	**0.45**	4.7996	1.7612	0.3177	1.7027
CS11-18_75	-0.076	0.571	0.084	**1.739**	9	20	2.08	3.74882	0.1694	**0.37**	11.2215	3.7669	0.4803	3.7488
CS11-18_76	37.57	5.691	0.549	24.81	89	286	2.99	2.03555	0.1116	**0.34**	5.1444	2.064	0.3345	2.0356
CS11-18_77	-100.7	1.812	0.171	8.137	28	94	3.07	2.0618	0.1093	**0.44**	4.9023	2.1089	0.3253	2.0618
CS11-18_78	**-406.1**	5.824	0.902	16.96	91	195	2.00	1.64366	0.1792	**0.31**	12.3475	1.6727	0.4998	1.6437
CS11-18_79	-55.87	3.202	0.302	14.44	50	166	3.09	1.79648	0.1091	**0.40**	4.8642	1.8404	0.3234	1.7965
CS11-18_80	-31.32	1.176	0.187	**3.292**	18	38	1.92	1.2911	0.1841	0.65	13.2149	1.4444	0.5205	1.2911
CS11-18_81	77.57	5.192	0.491	22.26	81	256	2.98	0.87058	0.1096	**0.38**	5.0676	0.9489	0.3353	0.8706
CS11-19_1	-36.22	1.068	0.093	5.498	28	97	3.46	1.21388	0.0993	**0.36**	3.9611	1.2667	0.2893	1.2139
CS11-19_2	215.4	5.525	0.423	37.52	146	661	4.55	2.23246	0.0879	**0.44**	2.6639	2.2757	0.2197	2.2325
CS11-19_3	-44.82	0.719	0.064	**3.715**	19	65	3.47	2.12184	0.1014	0.60	4.0239	2.2043	0.2878	2.1218
CS11-19_4	**1181**	2.6	0.361	15.27	69	269	3.95	1.03152	0.1535	2.55	5.3613	2.7529	0.2532	1.0315

CS11-19_5	-19.68	0.392	0.035	2.071	10	36	3.56	1.71016	0.1021	0.98	3.9595	1.9721	0.2812	1.7102
CS11-19_6	-95.38	0.427	0.032	2.724	11	48	4.41	1.37115	0.0867	0.64	2.7098	1.5128	0.2267	1.3711
CS11-19_7	-52.62	1.064	0.09	6.742	28	119	4.25	1.91491	0.0972	0.89	3.1530	2.1116	0.2353	1.9149
CS11-19_9	165.9	2.299	0.221	10.39	61	183	3.04	1.70437	0.1106	0.46	5.0178	1.766	0.3291	1.7044
CS11-19_10	-19.73	1.201	0.091	7.807	32	137	4.33	2.77547	0.0866	0.46	2.7564	2.8126	0.2307	2.7755
CS11-19_11	-157.2	1.295	0.117	6.962	34	123	3.60	2.26779	0.1039	0.47	3.9852	2.3154	0.2781	2.2678
CS11-19_12	460.8	0.908	0.083	4.476	24	79	3.31	1.16228	0.1049	0.66	4.3701	1.3364	0.3023	1.1623
CS11-19_13	-12.73	1.374	0.109	8.241	36	145	4.03	1.85488	0.0915	0.60	3.1327	1.9498	0.2484	1.8549
CS11-19_14	-232.1	1.022	0.092	5.224	27	92	3.43	2.09488	0.1028	0.60	4.1338	2.1789	0.2915	2.0949
CS11-19_15	-34.74	2.082	0.199	10.47	55	184	3.38	2.63887	0.1095	0.52	4.4646	2.6898	0.2958	2.6389
CS11-19_16	43.65	0.93	0.083	4.864	25	86	3.51	1.96637	0.1019	0.68	4.0074	2.0823	0.2852	1.9664
CS11-19_17	-13.69	2.509	0.255	10.91	66	192	2.90	2.4986	0.1168	0.34	5.5497	2.5217	0.3445	2.4986
CS11-19_18	**-171.5**	**1.148**	**0.08**	**8.594**	**30**	**151**	**5.00**	**1.60273**	**0.0800**	**0.59**	**2.2078**	**1.7088**	**0.2000**	**1.6027**
CS11-19_19	-9.95	2.219	0.171	13.5	59	238	4.15	1.08383	0.0882	0.40	2.9303	1.1567	0.2409	1.0838
CS11-19_20	-153.2	0.818	0.073	4.048	22	71	3.39	1.56224	0.1020	0.63	4.1501	1.6845	0.2951	1.5622
CS11-19_21	-16.21	2.989	0.246	20.32	79	358	4.50	2.88399	0.0936	0.38	2.8671	2.9091	0.2220	2.884
CS11-19_22	133.8	0.381	0.038	1.935	10	34	3.33	1.13685	0.1151	0.90	4.7650	1.4525	0.3002	1.1368
CS11-19_23	-88.81	1.417	0.109	8.045	37	142	3.88	0.97436	0.0908	0.51	3.2280	1.0982	0.2579	0.9744
CS11-19_24	-195.8	7.805	0.775	31.53	206	555	2.76	2.42938	0.1137	0.39	5.6849	2.4604	0.3625	2.4294
CS11-19_25	126.9	0.784	0.081	3.367	21	59	2.87	1.20914	0.1178	0.76	5.6623	1.4258	0.3485	1.2091
CS11-19_26	190.3	1.317	0.118	6.482	35	114	3.29	1.31834	0.1026	0.33	4.3061	1.3588	0.3043	1.3183
CS11-19_27	155.5	3.914	0.351	19.15	103	337	3.26	2.02067	0.1031	0.50	4.3667	2.0823	0.3072	2.0207
CS11-19_28	20.29	0.549	0.052	2.607	14	46	3.17	1.64914	0.1086	0.91	4.7303	1.8834	0.3159	1.6491
CS11-19_29	66.29	4.225	0.367	26.28	112	463	4.15	0.91841	0.1002	1.32	3.3287	1.6093	0.2410	0.9184
CS11-19_30	-194.6	1.034	0.09	5.272	27	93	3.40	1.87059	0.0999	0.72	4.0573	2.0061	0.2944	1.8706
CS11-19_31	-36.76	2.054	0.192	9.704	54	171	3.14	1.23061	0.1073	0.45	4.7057	1.3099	0.3180	1.2306
CS11-19_32	168.1	0.804	0.072	3.992	21	70	3.31	1.69106	0.1029	0.34	4.2878	1.724	0.3021	1.6911
CS11-19_33	-80.72	0.828	0.068	5.031	22	89	4.04	1.78056	0.0931	0.65	3.1769	1.896	0.2475	1.7806
CS11-19_34	153.5	0.742	0.083	4.43	20	78	3.98	1.51394	0.1287	0.71	4.4632	1.6706	0.2516	1.5139
CS11-19_35	-38.56	0.442	0.039	2.342	12	41	3.53	1.1328	0.1015	0.34	3.9675	1.182	0.2836	1.1328
CS11-19_36	89.1	1.528	0.13	9.77	40	172	4.23	2.66767	0.0973	0.69	3.1721	2.7564	0.2363	2.6677
CS11-19_37	173.2	5.685	0.499	33.15	150	584	3.81	3.12985	0.1012	1.21	3.6569	3.3563	0.2621	3.1299

CS11-19_38	-26.63	1.885	0.167	9.726	50	171	3.49	**0.6701**	0.1017	**0.36**	4.0221	0.7629	0.2868	**0.6701**
CS11-19_39	-198.5	1.237	0.092	8.166	33	144	4.40	1.89447	0.0858	0.78	2.6879	2.0472	0.2273	1.8945
CS11-19_40	228.7	0.464	0.042	**2.421**	12	43	3.45	**0.62982**	0.1040	0.92	4.1509	1.1143	0.2895	**0.6298**
CS11-19_41	261.2	1.332	0.126	6.446	35	114	3.20	1.47325	0.1083	**0.43**	4.6730	1.535	0.3130	1.4732
CS11-19_42	231.3	0.187	0.018	**0.885**	5	16	3.19	1.88553	0.1095	0.92	4.7325	2.0981	0.3134	1.8855
CS11-19_43	-283.2	1.301	0.115	6.901	34	122	3.51	1.19697	0.1013	0.72	3.9828	1.3948	0.2850	1.197
CS11-19_44	-252	2.142	0.196	10.84	57	191	3.34	1.83924	0.1043	**0.43**	4.3071	1.888	0.2995	1.8392
CS11-19_45	-7.321	1.2	0.106	6.258	32	110	3.44	1.62093	0.1016	**0.48**	4.0702	1.6914	0.2905	1.6209
CS11-19_46	-130.4	3.084	0.244	18.5	81	326	3.90	2.18478	0.0899	0.78	3.1813	2.3183	0.2566	2.1848
CS11-19_47	-98.97	3.101	0.28	14.77	82	260	3.22	2.61295	0.1070	0.62	4.5755	2.6861	0.3102	2.6129
CS11-19_48	-198.5	1.068	0.096	5.384	28	95	3.33	1.56828	0.1032	**0.36**	4.2734	1.6095	0.3003	1.5683
CS11-19_49	-143.4	2.595	0.231	13.27	68	234	3.36	1.98758	0.1020	**0.44**	4.1801	2.0358	0.2972	1.9876
CS11-19_50	-249.1	1.372	0.147	5.664	36	100	2.72	1.96354	0.1232	0.64	6.2392	2.0638	0.3672	1.9635
CS11-19_51	9.287	0.951	0.105	**3.888**	25	68	2.74	0.77492	0.1247	0.56	6.2663	0.954	0.3644	0.7749
CS11-19_52	-68.29	1.879	0.202	7.684	50	135	2.74	1.345	0.1234	**0.29**	6.2172	1.3758	0.3653	1.345
CS11-19_53	-235.6	1.227	0.089	9.272	32	163	4.95	2.32875	0.0831	**0.35**	2.3133	2.3545	0.2020	2.3288
CS11-19_54	-73.4	2.078	0.186	10.07	55	177	3.25	1.56263	0.1024	**0.42**	4.3444	1.617	0.3078	1.5626
CS11-19_55	-104.8	3.941	0.384	17.09	104	301	2.83	2.43486	0.1119	**0.36**	5.4535	2.4613	0.3535	2.4349
CS11-19_56	-30.06	3.615	0.434	17.68	95	311	3.15	5.04767	0.1368	0.54	5.9798	5.0768	0.3170	5.0477
CS11-19_57	-142	1.133	0.095	6.34	30	112	3.71	2.11917	0.0957	**0.45**	3.5542	2.1668	0.2693	2.1192
CS11-19_58	-173.7	2.586	0.232	12.54	68	221	3.18	2.03954	0.1028	**0.38**	4.4545	2.0741	0.3142	2.0395
CS11-19_59	-176.1	1.981	0.185	12.3	52	217	4.02	4.02419	0.1066	0.60	3.6546	4.0685	0.2486	4.0242
CS11-19_60	**-326.4**	3.083	0.245	19.3	81	340	4.03	3.66465	0.0909	**0.43**	3.1136	3.69	0.2484	3.6646
CS11-19_61	-66.43	2.137	0.159	13.89	56	245	4.25	1.87425	0.0856	**0.29**	2.7734	1.8969	0.2351	1.8743
CS11-19_62	-291.9	2.093	0.182	10.59	55	187	3.33	1.83522	0.0999	**0.41**	4.1321	1.8814	0.3001	1.8352
CS11-19_63	4.583	1.384	0.115	8.081	37	142	3.81	1.56648	0.0971	0.53	3.5126	1.6526	0.2623	1.5665
CS11-19_64	205.9	0.747	0.078	4.724	20	83	4.14	2.73266	0.1172	1.64	3.9058	3.1871	0.2417	2.7327
CS11-19_65	-117.9	3.045	0.289	14.12	80	249	3.05	2.50083	0.1092	**0.39**	4.9395	2.5303	0.3282	2.5008
CS11-19_66	**348.7**	3.869	0.347	32.06	102	564	5.24	5.7654	0.1028	0.52	2.7035	5.7889	0.1908	5.7654
CS11-19_67	-128.5	1.84	0.151	10.52	49	185	3.75	2.06753	0.0946	0.51	3.4727	2.1294	0.2663	2.0675
CS11-19_68	187.2	2.822	0.229	16.79	74	296	3.87	2.8255	0.0932	**0.50**	3.3212	2.8688	0.2585	2.8255
CS11-19_69	19.61	1.084	0.095	5.687	29	100	3.45	1.9698	0.1013	**0.43**	4.0485	2.0154	0.2897	1.9698

CS11-19_70	81.77	2.641	0.246	12.81	70	226	3.18	2.29368	0.1074	**0.30**	4.6529	2.3127	0.3142	2.2937
CS11-19_71	43.21	0.384	0.028	**2.633**	10	46	4.52	1.98975	0.0854	**0.49**	2.6080	2.0492	0.2214	1.9898
CS11-19_72	-42.62	1.678	0.276	4.844	44	85	1.89	2.65294	0.1887	**0.35**	13.7411	2.6758	0.5281	2.6529
CS11-19_73	**452.6**	4.349	0.439	34.6	115	609	4.97	4.97158	0.1154	0.70	3.2009	5.0201	0.2012	4.9716
CS11-19_74	27.8	1.248	0.1	7.343	33	129	3.85	2.89194	0.0916	0.50	3.2772	2.9354	0.2595	2.8919
CS11-19_75	-75.48	0.729	0.064	**3.793**	19	67	3.40	2.75523	0.1013	0.60	4.1106	2.8193	0.2942	2.7552
CS11-19_76	68.47	0.983	0.075	6.333	26	112	4.23	2.58493	0.0881	0.53	2.8673	2.6384	0.2362	2.5849
CS11-19_77	-286.2	3.795	0.67	13.46	100	237	2.29	3.8862	0.2030	**0.33**	12.2481	3.9003	0.4376	3.8862
CS11-19_78	114.9	2.084	0.219	8.544	55	150	2.69	2.69192	0.1204	**0.46**	6.1721	2.7315	0.3717	2.6919
CS11-19_79	-43.05	0.418	0.038	**2.11**	11	37	3.32	3.65441	0.1045	0.81	4.3378	3.7441	0.3011	3.6544
CS11-19_80	-243.3	1.785	0.16	9.323	47	164	3.43	2.05992	0.1031	0.52	4.1437	2.1246	0.2916	2.0599
CS11-19_81	**317.3**	4.4	0.462	26.6	116	468	4.31	2.84454	0.1205	**0.44**	3.8568	2.8788	0.2322	2.8445
CS11-19_82	-7.884	0.933	0.076	5.561	25	98	4.12	1.93777	0.0937	**0.35**	3.1363	1.9692	0.2429	1.9378
CS11-19_83	-119	2.061	0.201	8.545	54	150	2.88	1.49871	0.1121	**0.37**	5.3726	1.5428	0.3477	1.4987
CS11-19_84	**-408.4**	1.282	0.113	5.854	34	103	3.15	1.92393	0.1007	0.67	4.4087	2.0385	0.3175	1.9239
CS11-19_85	-120.4	4.47	0.421	19.62	118	345	3.00	2.43188	0.1082	**0.37**	4.9710	2.4604	0.3334	2.4319

Rho	$^{207}Pb/^{206}Pb$	2s abs	$^{206}Pb/^{238}U$	2s abs	$^{207}Pb/^{235}U$	2s abs	6-38/7-6
0.926	1078.9237	8.333949	1104.3	20.7	1095.8	14.7	-2%
0.958	1067.4055	7.956305	1123.4	27.1	1104.5	18.3	-5%
0.886	953.2803	16.40559	1013.9	28.6	994.9	21.7	-6%
0.910	932.8894	12.7744	1002.7	25.4	981.0	18.8	-7%
0.429	1006.4941	27.2549	1037.4	12.2	1027.5	19.0	-3%
0.857	1071.7414	14.53416	1087.5	24.0	1082.3	18.5	-1%
0.951	1068.8985	9.937295	1132.3	31.4	1110.8	21.3	-6%
0.947	1487.2949	13.10767	1509.4	54.9	1500.3	33.3	-1%
0.931	1016.2306	8.808697	969.7	20.0	984.0	15.0	5%
0.825	1503.3039	9.34482	1518.2	19.5	1512.0	13.7	-1%
0.814	993.7888	15.21693	972.0	18.9	978.7	16.1	2%
0.974	1493.5910	6.644588	1517.0	40.7	1507.3	24.1	-2%
0.764	1015.4652	23.56956	1036.7	26.4	1029.9	23.1	-2%
0.939	1082.6531	9.189354	1094.6	25.1	1090.6	17.6	-1%
0.709	1002.6858	21.306	1019.3	19.9	1014.0	18.9	-2%
0.906	1651.3365	10.56839	1590.8	34.3	1617.0	21.5	4%
0.956	1524.5921	9.070267	1501.8	41.8	1511.3	25.4	1%
0.876	1061.1872	17.17796	1001.6	28.7	1020.5	22.5	6%
0.974	1489.6620	6.654902	1517.9	40.7	1506.2	24.1	-2%
0.732	1047.0106	30.31366	964.7	28.9	990.1	27.5	8%
0.755	1069.8398	27.24296	1066.4	30.6	1067.5	26.9	0%
0.949	1493.9802	7.390919	1510.9	31.7	1503.9	19.3	-1%
0.746	923.3003	32.77664	969.7	32.1	955.6	29.3	-5%
0.956	1495.0955	9.915263	1547.1	46.6	1525.3	27.7	-3%
0.775	1081.7300	19.52012	1047.1	23.1	1058.4	20.1	3%
0.958	1035.6908	15.87981	1058.0	51.3	1050.7	35.4	-2%
0.977	993.9347	10.33459	972.8	42.0	979.3	29.6	2%
0.977	1241.3050	6.686417	1247.9	35.0	1245.5	22.5	-1%
0.680	991.0858	31.40465	961.6	25.6	970.6	26.0	3%
0.912	955.0990	15.56833	956.3	30.0	956.0	22.7	0%
0.429	1018.7819	47.31787	971.5	20.0	986.1	32.1	5%
0.967	1053.1113	7.594379	1007.5	26.5	1022.0	18.8	4%

0.979	1500.6558	9.708568	1488.4	65.2	1493.5	38.7	1%
0.987	1262.9423	5.897652	1252.5	42.4	1256.3	26.9	1%
0.662	1227.6302	36.57784	1180.1	35.4	1197.0	34.4	4%
0.980	1587.8789	11.82372	1317.6	74.2	1424.4	47.8	17%
0.970	1502.9053	12.79931	1467.5	70.5	1482.0	42.5	2%
0.979	1501.9676	7.678509	1466.0	51.2	1480.8	30.7	2%
0.963	991.4911	10.1035	974.1	32.1	979.5	23.0	2%
0.802	1276.0382	23.9138	912.6	28.0	1025.8	26.2	28%
0.668	991.5215	25.8534	1044.6	22.0	1027.6	21.8	-5%
0.857	970.9422	21.17286	970.3	31.0	970.5	24.9	0%
0.784	945.0724	27.18486	997.0	30.9	980.9	26.6	-5%
0.909	955.5082	15.02123	1003.6	29.8	988.6	22.1	-5%
0.802	930.6317	32.62557	980.2	38.7	965.0	32.6	-5%
0.877	985.5770	15.55771	1023.5	26.4	1011.5	20.2	-4%
0.870	1098.3331	34.53596	1124.9	62.5	1115.9	46.3	-2%
0.976	1485.4852	6.665901	1526.6	42.7	1509.5	25.0	-3%
0.393	1117.7350	54.73776	970.6	21.1	1016.8	37.6	13%
0.504	810.6576	50.87422	969.3	25.5	922.0	33.6	-20%
0.717	918.7276	28.79717	956.9	25.6	945.4	24.4	-4%
0.942	1499.5307	7.06728	1477.6	27.7	1486.6	17.3	1%
0.939	1027.8735	10.15228	1085.2	27.3	1066.3	19.0	-6%
0.817	1052.9046	19.34596	1049.7	26.3	1050.8	21.6	0%
0.766	1484.8522	9.791455	1507.4	16.5	1498.1	12.5	-2%
0.964	1078.3060	7.125586	1104.2	26.1	1095.5	17.8	-2%
0.626	987.6789	39.85495	987.4	28.8	987.5	31.2	0%
0.946	1070.9035	11.34082	1084.9	32.7	1080.2	22.8	-1%
0.956	1068.7884	9.253284	1101.8	30.4	1090.7	20.8	-3%
0.842	1220.6291	22.39358	1219.3	39.4	1219.8	29.6	0%
0.892	1063.3417	9.966072	1093.8	19.7	1083.7	14.5	-3%
0.945	1493.2216	7.39342	1571.6	31.4	1538.5	18.7	-5%
0.930	1094.3267	12.63011	1076.0	31.6	1082.1	22.6	2%
0.967	1524.8800	8.073988	1478.9	43.0	1497.9	26.1	3%

0.834	1016.5779	22.47188	1061.0	32.8	1046.6	26.0	-4%
0.897	1115.7213	16.12608	1082.5	32.7	1093.6	24.2	3%
0.922	1076.2114	14.24614	1084.7	33.7	1081.9	24.2	-1%
0.972	1523.4634	9.075596	1436.6	51.4	1472.0	31.6	6%
0.972	1523.4634	9.075596	1436.5	51.4	1471.9	31.6	6%
0.483	975.9101	76.98349	975.2	37.6	975.4	52.7	0%
0.895	922.6203	15.59162	981.9	27.7	963.8	21.0	-6%
0.981	1503.1145	6.21115	1553.7	45.5	1532.4	26.3	-3%
0.940	1549.9325	9.118702	1539.7	36.6	1544.0	22.3	1%
0.913	1069.9498	10.39732	1080.9	22.9	1077.3	16.7	-1%
0.325	951.1623	52.28261	958.9	15.6	956.5	32.9	-1%
0.946	1498.1415	9.370312	1436.8	37.1	1461.7	23.4	4%
0.837	1106.8777	16.71019	1113.5	26.1	1111.3	20.4	-1%
0.837	1106.8777	16.71019	1113.5	26.1	1111.2	20.4	-1%
0.760	1002.7049	28.41964	986.4	29.9	991.5	26.9	2%
0.912	1079.3978	15.47167	1075.2	33.8	1076.6	24.6	0%
0.903	1618.2533	9.605704	1628.0	31.1	1623.8	19.3	-1%
0.954	1111.3569	8.41748	1142.4	28.1	1131.7	19.1	-3%
0.987	1483.8971	5.242384	1485.6	45.0	1484.9	26.5	0%
0.920	967.5888	10.98215	996.3	23.2	987.4	17.2	-3%
0.763	880.2230	42.66851	958.5	43.2	935.1	38.3	-9%
0.708	884.6115	30.60741	968.5	26.6	943.2	25.4	-9%
0.959	1040.9845	13.27256	1069.7	43.6	1060.3	30.0	-3%
0.878	958.7329	19.93904	969.3	32.1	966.1	25.1	-1%
0.954	1114.7465	10.8398	1068.8	33.8	1084.0	23.8	4%
0.963	1030.6772	8.524943	1070.4	29.5	1057.4	20.2	-4%
0.770	893.0639	26.90414	954.3	27.8	936.0	24.7	-7%
0.957	1238.3365	12.29717	1218.9	45.8	1225.9	30.3	2%
0.975	1047.2287	10.05012	1051.6	42.6	1050.2	29.1	0%
0.778	953.7239	23.64662	961.4	25.6	959.1	22.6	-1%
0.731	887.2935	26.41008	963.8	24.4	940.8	22.7	-9%
0.955	1051.5048	12.19792	1035.3	37.3	1040.5	26.3	2%

0.968	1498.3771	8.850682	1494.4	48.0	1496.1	28.8	0%
0.970	1097.1567	9.344203	1086.6	37.0	1090.1	25.2	1%
0.918	1234.9596	11.22804	1201.8	28.9	1213.7	20.2	3%
0.948	1515.4503	8.773829	1462.0	36.0	1483.9	22.4	4%
0.8101	985.0134	18.53102	954.0	22.3	963.4	19.1	3%
0.6379	846.0056	136.1573	1091.2	108.0	1012.5	103.5	-29%
0.9108	1498.2591	10.07641	1513.4	31.6	1507.1	20.1	-1%
0.9573	1244.9699	10.95152	1233.3	41.5	1237.6	27.3	1%
0.7978	982.6117	26.27571	980.3	31.0	981.0	26.6	0%
0.8078	954.7795	20.54541	958.0	24.5	957.0	20.9	0%
0.963	1077.2059	12.02316	1079.9	42.4	1079.0	29.1	0%
0.9647	1505.7768	7.50754	1497.8	38.8	1501.1	23.4	1%
0.912	1120.5994	11.03593	1064.1	24.1	1082.8	17.8	5%
0.4933	858.0617	37.18582	947.1	17.9	920.7	24.6	-10%
0.9065	1105.4440	16.22603	1056.7	33.9	1072.7	25.2	4%
0.5433	892.3486	111.1891	961.1	61.9	940.4	75.8	-8%
0.9327	1090.6823	10.28359	1073.7	26.2	1079.3	18.8	2%
0.9153	1639.2589	11.9835	1591.8	41.3	1612.3	25.6	3%
0.7655	959.6885	19.64966	945.2	20.1	949.6	18.3	2%
0.8443	1660.9211	9.545784	1618.2	23.2	1636.8	15.5	3%
0.9612	1238.4547	9.109113	1264.6	37.1	1255.0	24.0	-2%
0.6385	957.6003	23.0281	964.5	16.7	962.4	18.0	-1%
0.727	987.5444	37.05946	962.0	34.4	969.8	32.6	3%
0.8651	1316.1304	19.75946	1233.5	39.3	1264.0	29.0	6%
0.9808	1669.1945	5.978526	1640.0	46.9	1652.8	26.7	2%
0.967	1659.4962	8.463217	1662.9	50.7	1661.4	28.9	0%
0.8959	995.8099	13.62214	974.6	24.4	981.1	18.8	2%
0.9636	1117.9082	11.28441	1075.7	40.3	1089.7	27.9	4%
0.9385	1118.1653	14.62994	1043.8	38.3	1068.1	27.7	7%
0.9758	1670.8579	7.534273	1677.5	53.5	1674.6	30.1	0%
0.9786	1525.5537	7.288068	1497.4	48.9	1509.1	29.1	2%
0.9817	1657.0350	6.241669	1632.5	49.9	1643.3	28.4	1%

0.8697	983.5729	21.55871	962.4	33.3	968.9	26.4	2%
0.9362	1108.7513	11.81259	1057.3	30.6	1074.2	22.1	5%
0.9494	977.4542	10.42461	967.6	27.7	970.6	20.2	1%
0.9048	1649.5732	18.33434	1644.4	60.7	1646.7	37.2	0%
0.9293	1144.9715	11.80692	1108.7	30.4	1121.0	21.6	3%
0.9844	1653.0493	5.575365	1681.4	49.6	1668.8	27.6	-2%
0.7816	850.0830	52.68795	960.4	56.4	927.5	48.3	-13%
0.9406	1512.0389	6.063652	1548.3	24.4	1533.0	14.9	-2%
0.858	935.7865	24.48173	960.6	35.5	953.1	28.3	-3%
0.803	946.1784	15.65055	935.2	17.9	938.5	15.6	1%
0.9077	1010.4205	12.73812	969.7	24.4	982.3	18.7	4%
0.7731	917.9528	35.80688	932.8	36.8	928.4	32.9	-2%
0.9093	1120.8358	12.44093	1088.1	27.2	1099.1	19.9	3%
0.9271	1067.3905	13.56953	1067.0	32.8	1067.1	23.5	0%
0.9056	1073.2380	18.07734	1051.4	37.2	1058.5	27.5	2%
0.8414	1094.6858	26.81938	1106.3	42.3	1102.4	32.8	-1%
0.6547	1045.8778	41.10151	1044.6	34.0	1045.0	34.6	0%
0.9718	1119.0280	6.656655	1079.5	27.3	1092.7	18.8	4%
0.7195	1323.1316	93.19506	1004.2	92.0	1109.9	89.5	24%
0.9644	1114.3066	9.483929	1094.8	34.8	1101.3	23.9	2%
0.9696	1645.0278	10.2774	1627.5	62.9	1635.2	36.1	1%
0.8704	1656.0530	15.63268	1635.8	43.0	1644.7	27.5	1%
0.5797	1491.6883	22.83866	1479.9	22.7	1484.8	22.8	1%
0.9276	1088.4003	9.16303	1098.2	22.9	1094.9	16.3	-1%
0.8459	1257.6132	15.03411	1249.5	27.6	1252.5	20.5	1%
0.7238	1071.3368	20.94111	1087.1	21.8	1081.9	19.9	-1%
0.9383	1107.1062	9.297398	1125.3	26.0	1119.1	18.1	-2%
0.8355	1121.5116	19.29842	900.2	24.7	966.8	21.7	20%
0.7268	1121.9052	28.90872	1082.9	30.5	1095.9	27.9	3%
0.9274	1521.9335	8.913235	1517.4	31.6	1519.3	19.7	0%
0.8378	1048.4951	16.79157	983.3	23.3	1003.7	19.3	6%
0.8788	1523.7661	11.00226	1498.2	28.7	1508.8	19.0	2%

0.9595	1656.9279	9.249638	1575.9	47.4	1610.9	28.2	5%
0.3056	965.6274	60.35769	951.1	16.8	955.5	37.7	2%
0.8992	982.8340	13.98784	975.4	25.5	977.7	19.5	1%
0.7677	1121.6944	16.8084	1062.1	19.7	1081.8	17.4	5%
0.9866	1539.6840	6.663788	1571.7	59.4	1558.1	34.0	-2%
0.6063	970.6814	28.71683	951.8	19.0	957.5	21.7	2%
0.5151	1019.6183	25.67396	950.3	13.5	971.5	18.3	7%
0.5511	929.3672	29.76017	943.0	16.8	938.9	21.1	-1%
0.5511	929.3672	29.76017	943.1	16.8	939.0	21.1	-1%
0.9335	1103.7080	13.53049	1108.1	35.8	1106.6	25.1	0%
0.9563	991.3124	9.38376	990.6	27.6	990.8	19.8	0%
0.9877	1659.6209	7.289623	1639.8	71.6	1648.5	40.3	1%
0.8996	1096.0241	14.57517	1032.4	28.6	1053.0	21.6	6%
0.9359	1762.2336	8.605725	1753.8	38.3	1757.6	22.1	0%
0.914	1803.2841	11.64729	1753.4	44.2	1776.3	26.1	3%
0.9947	2683.7225	5.041462	2642.0	127.2	2665.7	54.6	2%
0.9762	1792.2226	8.898295	1759.4	67.4	1774.5	37.1	2%
0.9937	1788.2065	5.043907	1616.3	69.9	1692.5	40.0	10%
0.9458	1839.9038	7.60893	1868.1	39.6	1854.8	21.8	-2%
0.9875	1927.6892	7.787813	1862.6	87.3	1893.6	46.2	3%
0.859	1810.6452	8.532561	1788.9	24.6	1799.0	15.3	1%
0.9884	1828.5400	6.0815	1819.1	68.7	1823.5	36.7	1%
0.9786	1802.4748	7.881347	1793.8	64.2	1797.8	34.9	0%
0.9919	1806.6140	6.356532	1815.6	86.1	1811.4	45.6	0%
0.981	1808.5342	5.807215	1832.6	51.3	1821.4	27.5	-1%
0.9887	2719.5617	5.83603	2678.3	101.4	2701.9	43.6	2%
0.9848	2686.0028	5.090122	2561.7	73.4	2631.7	32.8	5%
0.9925	1826.2472	5.979463	1775.7	82.7	1799.1	44.6	3%
0.9498	1791.8313	8.33568	1777.6	43.0	1784.2	24.3	1%
0.9846	1821.8267	5.9889	1856.2	59.7	1840.1	31.6	-2%
0.8999	1819.7796	13.35701	1708.5	45.4	1759.1	27.8	6%
0.9368	1811.2087	6.460768	1825.4	30.2	1818.8	17.1	-1%

0.9744	1822.1623	5.780765	1822.3	43.7	1822.2	23.7	0%
0.9525	1778.7439	8.81803	1715.8	45.4	1744.4	26.1	4%
0.9614	2699.9496	5.818717	2670.3	53.6	2687.2	23.9	1%
0.9552	1819.8116	5.685527	1780.7	31.4	1798.8	17.7	2%
0.9873	1767.7961	5.680728	1483.5	51.1	1604.8	31.1	16%
0.9727	1805.3056	5.91764	1770.6	42.1	1786.6	23.3	2%
0.981	2623.9918	5.077252	2498.6	63.7	2568.4	29.0	5%
0.9547	1796.2279	6.38249	1529.6	30.6	1645.2	19.0	15%
0.8784	1794.3080	11.86214	1740.6	36.4	1765.2	22.6	3%
0.7834	1794.3080	10.49838	1719.1	21.9	1753.3	15.4	4%
0.9717	1811.7720	7.192508	1819.0	51.4	1815.6	28.0	0%
0.8589	1722.7894	11.09476	1679.3	29.9	1698.7	19.3	3%
0.9931	1795.4472	5.186406	1681.4	71.2	1732.8	39.7	6%
0.973	1773.6020	5.983796	1787.3	43.0	1781.0	23.6	-1%
0.9819	2645.4100	5.153239	2629.1	69.2	2638.3	30.4	1%
0.9863	1754.6285	4.943306	1772.0	49.9	1764.0	27.0	-1%
0.9649	2707.3205	5.440782	2636.0	52.2	2676.5	23.4	3%
0.9695	2693.1645	6.225574	2687.7	65.2	2690.8	28.6	0%
0.9585	1795.0893	5.938778	1835.6	35.0	1816.7	19.2	-2%
0.9488	2437.0219	6.098993	2417.5	43.5	2428.1	20.8	1%
0.9913	1783.6057	5.555119	1821.4	72.6	1803.8	38.4	-2%
0.9793	1784.6548	6.295266	1747.8	51.0	1764.6	28.2	2%
0.9828	2633.7887	7.431598	2634.5	102.1	2634.1	44.5	0%
0.9526	1894.2659	16.15438	1791.6	87.3	1839.5	48.9	5%
0.9658	1808.3730	4.953483	1724.4	30.7	1762.7	17.4	5%
0.9871	2629.5418	6.690969	2548.1	103.4	2593.7	45.9	3%
0.9711	2672.6766	4.955555	2660.2	52.9	2667.3	23.4	0%
0.9947	2600.6658	5.225468	2587.4	128.2	2594.8	55.7	1%
0.9798	2576.3159	5.03867	2505.5	61.0	2544.8	27.7	3%
0.9722	1790.4445	9.631121	1786.2	68.1	1788.1	37.3	0%
0.988	1845.5297	6.043824	1804.8	67.0	1823.8	36.0	2%
0.9873	2746.4286	5.896971	2778.6	99.9	2760.0	41.9	-1%

0.9792	1777.7235	9.698751	1787.4	79.7	1782.9	43.1	-1%
0.9846	1840.8509	6.853932	1742.1	64.7	1787.5	35.7	5%
0.9861	1783.4581	5.555367	1795.9	56.4	1790.1	30.4	-1%
0.9691	1783.2941	10.41385	1794.3	70.0	1789.2	38.2	-1%
0.9899	1783.9172	11.3203	1806.9	135.0	1796.3	71.1	-1%
0.9877	1800.4332	8.859792	1815.8	96.6	1808.6	51.3	-1%
0.9821	1796.1954	7.770672	1827.8	70.6	1813.1	37.7	-2%
0.9417	1788.6969	6.639813	1767.0	31.4	1777.0	18.0	1%
0.9194	1893.6113	14.82429	728.2	26.5	1084.8	27.5	62%
0.9651	2705.5706	6.951347	2572.0	65.6	2647.4	29.8	5%
0.9597	2698.0506	5.69857	2696.3	51.7	2697.3	22.9	0%
0.9772	2748.1291	4.765689	2727.1	59.0	2739.2	25.5	1%
0.9865	2713.0773	6.304987	2701.9	101.0	2708.3	43.3	0%
0.9919	2700.7452	4.91747	2689.4	101.2	2695.9	43.2	0%
0.9811	1730.4733	6.932398	1760.1	58.7	1746.6	32.0	-2%
0.9928	1790.5424	5.360667	1824.7	77.3	1808.8	40.8	-2%
0.9909	1807.8407	5.60957	1797.8	70.9	1802.4	38.0	1%
0.9831	1793.9661	6.388171	1809.6	59.2	1802.3	31.8	-1%
0.9506	2954.5272	7.01641	2856.0	61.1	2914.1	26.5	3%
0.9836	2835.1088	4.83279	2857.1	74.2	2844.2	30.9	-1%
0.9668	1792.3041	8.194973	1778.4	52.7	1784.8	29.2	1%
0.9952	2552.1282	6.180361	2528.7	154.9	2541.7	67.9	1%
0.9862	1824.8602	6.199442	1860.0	65.4	1843.5	34.5	-2%
0.9777	1787.5361	8.076439	1815.8	64.9	1802.7	35.0	-2%
0.9826	2645.2192	5.153541	2613.0	70.2	2631.2	30.9	1%
0.9762	1784.4582	7.282524	1806.1	56.3	1796.1	30.5	-1%
0.8939	2690.4908	10.70171	2701.3	56.7	2695.1	26.9	0%
0.9175	1792.8257	6.873792	1864.2	28.1	1830.7	16.0	-4%
0.9583	1610.9670	6.745428	1638.1	35.0	1626.3	20.3	-2%
0.981	1381.1081	8.483353	1280.3	51.6	1318.5	33.1	7%
0.9626	1649.9453	11.07231	1630.6	60.8	1639.0	35.2	1%
0.3747	2385.7324	43.46386	1455.2	26.8	1878.7	46.1	39%

0.8672	1663.3543	18.17507	1597.2	48.2	1625.9	31.5	4%
0.9064	1353.7686	12.32831	1317.1	32.6	1331.2	22.2	3%
0.9069	1570.6691	16.66918	1362.3	46.9	1445.7	32.0	13%
0.9651	1808.8268	8.401868	1834.2	54.2	1822.3	29.5	-1%
0.9868	1352.5195	8.789077	1338.4	66.7	1343.8	41.1	1%
0.9794	1695.6728	8.607574	1581.7	63.3	1631.2	36.9	7%
0.8697	1711.8969	12.13152	1702.5	34.7	1706.7	21.8	1%
0.9513	1456.7148	11.42948	1430.0	47.4	1440.8	29.6	2%
0.9614	1676.1044	11.0708	1649.1	60.7	1661.0	35.0	2%
0.9811	1790.6166	9.483927	1670.4	77.2	1724.4	43.7	7%
0.9443	1659.4323	12.68375	1617.3	56.0	1635.7	33.3	3%
0.9908	1908.5307	6.112769	1908.1	82.0	1908.3	42.5	0%
0.938	**1198.0509**	**11.68422**	**1175.6**	**34.4**	**1183.5**	**23.6**	**2%**
0.937	1387.2066	7.756934	1391.5	27.1	1389.8	17.4	0%
0.9274	1661.0867	11.66442	1666.7	45.7	1664.2	27.2	0%
0.9914	1501.0031	7.21413	1292.7	67.2	1373.3	42.9	14%
0.7827	1881.5627	16.28472	1692.5	33.8	1778.8	24.1	10%
0.8872	1441.6196	9.655491	1479.3	25.7	1463.9	16.9	-3%
0.9874	1859.8169	7.038653	1994.2	82.8	1929.1	41.6	-7%
0.8481	1923.4703	13.54149	1927.7	40.2	1925.6	24.3	0%
0.9702	1672.3205	6.087761	1712.5	39.5	1694.5	22.2	-2%
0.9704	1680.5041	9.289477	1726.9	60.9	1706.1	33.8	-3%
0.8756	1776.1273	16.60032	1769.7	50.8	1772.6	31.1	0%
0.5707	1627.4827	24.57034	1391.8	23.0	1487.8	24.8	14%
0.9324	1622.9243	13.4859	1663.7	54.6	1645.8	32.2	-3%
0.9395	1754.6542	8.210191	1779.8	38.2	1768.3	21.7	-1%
0.9809	1677.6884	6.194256	1701.8	50.4	1691.0	28.0	-1%
0.9391	1489.7683	12.33351	1425.6	45.4	1451.6	28.9	4%
0.9062	2080.0584	12.43142	1446.5	39.1	1724.2	27.3	30%
0.9584	1651.1146	6.2554	1609.4	32.2	1627.6	19.0	3%
0.9678	1573.9539	12.98917	1367.6	65.4	1450.4	41.7	13%
0.9325	1645.8813	22.48248	1500.7	83.3	1562.0	52.2	9%

0.8784	1655.9236	6.754454	1625.3	19.2	1638.7	12.3	2%
0.9254	1332.9256	15.0096	1320.3	45.1	1325.1	29.9	1%
0.5652	1696.7038	16.94119	1638.9	18.2	1664.4	18.1	3%
0.9598	1770.9228	7.866631	1755.2	45.1	1762.4	25.4	1%
0.8987	1791.6968	16.75798	1757.2	57.7	1773.0	34.6	2%
0.8582	1648.7752	13.27754	1616.7	34.1	1630.7	22.4	2%
0.9742	1702.1562	7.8484	1688.7	54.4	1694.7	30.6	1%
0.9583	1653.7862	8.951132	1644.1	46.9	1648.3	27.2	1%
0.9424	1423.8704	14.81162	1472.4	57.3	1452.6	35.2	-3%
0.9728	1748.4452	11.40036	1741.8	79.3	1744.8	43.8	0%
0.9744	1682.6037	6.680591	1692.8	46.5	1688.3	26.1	-1%
0.9763	1660.8756	8.155912	1677.5	58.4	1670.1	32.8	-1%
0.9514	2003.7257	11.28312	2016.0	67.6	2010.0	35.5	-1%
0.8123	2024.9397	9.855521	2002.9	26.6	2013.8	16.6	1%
0.9776	2006.3768	5.137521	2007.4	46.2	2006.9	23.8	0%
0.9891	1270.4979	6.773938	1186.1	50.3	1216.4	32.8	7%
0.9664	1667.4588	7.689783	1729.9	47.2	1701.8	26.3	-4%
0.9892	1830.3225	6.527242	1951.3	81.5	1893.3	41.4	-7%
0.9943	2187.0109	9.451387	1775.3	154.8	1972.9	84.7	19%
0.978	1542.4816	8.48981	1537.1	57.7	1539.4	33.8	0%
0.9834	1675.8432	6.963852	1761.2	62.6	1722.5	33.8	-5%
0.9891	1742.6100	10.96878	1431.1	102.5	1561.5	62.9	18%
0.9931	1444.6105	8.224384	1430.3	93.3	1436.0	55.2	1%
0.988	1328.2638	5.662792	1361.1	45.8	1348.4	27.9	-2%
0.9754	1621.2994	7.711044	1692.0	54.4	1660.7	30.3	-4%
0.9479	1569.8281	9.861426	1501.4	41.8	1530.0	25.8	4%
0.8574	1914.0765	29.43207	1395.5	68.2	1614.9	50.3	27%
0.9883	1785.6245	7.021377	1829.4	79.2	1809.0	41.9	-2%
0.9959	1674.4316	9.633773	1125.8	118.0	1329.4	82.4	33%
0.9709	1519.4716	9.611059	1522.1	55.8	1521.0	33.0	0%
0.9849	1491.4175	9.403653	1482.3	74.4	1486.0	43.8	1%
0.9774	1648.7929	7.905579	1640.2	56.8	1644.0	32.3	1%

0.9918	1755.7939	5.412796	1761.4	70.3	1758.8	37.9	0%
0.971	1325.2542	9.488505	1289.3	46.3	1302.9	29.6	3%
0.9914	2731.0143	5.748368	2733.4	117.1	2732.0	49.4	0%
0.9903	1886.0311	12.53767	1181.7	106.5	1457.4	74.9	37%
0.9852	1459.0082	9.566563	1487.3	76.4	1475.7	44.7	-2%
0.9773	1648.8284	11.07941	1662.4	80.2	1656.4	45.0	-1%
0.9797	1383.7090	10.15111	1366.7	63.4	1373.4	39.0	1%
0.9964	2850.4825	5.388473	2339.8	150.7	2623.6	70.7	18%
0.9855	1962.4283	8.269828	2037.6	93.4	2000.5	46.6	-4%
0.976	1705.1654	14.99607	1696.9	108.1	1700.6	60.0	0%
0.9696	1679.8788	9.60528	1649.6	59.7	1663.0	34.2	2%
0.9881	1963.3759	7.895435	1345.8	68.7	1604.7	45.4	31%
0.984	1501.2457	6.624579	1401.6	48.6	1441.7	29.9	7%
0.9714	1833.0211	6.637323	1923.8	49.7	1880.5	26.1	-5%
0.9438	1637.2913	12.50922	1777.4	59.5	1714.0	33.2	-9%
0.9884	1768.5020	6.820243	1854.6	77.9	1814.4	40.8	-5%

Samples	^{204}Pb	^{206}Pb	^{207}Pb	^{208}Pb	^{232}Th	^{235}U	Th/U	Pbppm	Thppm
CS11-20_1	49	75825	6523	6485	54212	387931	2.7	7.1	46.8
CS11-20_2	281	97510	8232	14633	192364	569582	6.5	9.1	166.0
CS11-20_3	-250	100710	7815	13319	116981	612496	3.7	9.4	101.0
CS11-20_4	404	166544	20508	23174	112517	542636	4.0	15.6	97.1
CS11-20_5	337	378919	32977	39321	269719	2250367	2.3	35.4	232.8
CS11-20_6	24	43915	3470	5935	57860	308010	3.6	4.1	49.9
CS11-20_7	-1	73747	7501	11783	62346	289829	4.2	6.9	53.8
CS11-20_8	-235	258404	26758	64376	345807	1020163	6.5	24.1	298.4
CS11-20_9	507	243829	24211	36505	211531	921745	4.4	22.8	182.6
CS11-20_10	-33	39411	3098	15885	129282	239737	10.4	3.7	111.6
CS11-20_11	-32	253362	27433	36074	243055	1003992	4.7	23.7	209.8
CS11-20_12	90	239161	25334	38141	194186	886327	4.2	22.3	167.6
CS11-20_13	182	1203285	226142	247890	787519	2680125	5.7	112.4	679.7
CS11-20_14	-113	590487	66847	64309	351923	2828696	2.4	55.2	303.7
CS11-20_15	235	93157	8107	18199	119857	476113	4.9	8.7	103.4
CS11-20_16	192	90364	9599	43489	233398	352946	12.8	8.4	201.4
CS11-20_17	347	82001	9035	3112	17024	304704	1.1	7.7	14.7
CS11-20_18	27	185307	20258	18413	92350	661360	2.7	17.3	79.7
CS11-20_19	346	100152	9680	13795	83720	456625	3.5	9.4	72.3
CS11-20_20	-200	306999	27018	25539	161067	1683517	1.8	28.7	139.0
CS11-20_21	68	703504	120058	220457	855367	1898244	8.7	65.7	738.2
CS11-20_22	-203	240113	24452	34512	222510	1003278	4.3	22.4	192.0
CS11-20_24	190	170663	14273	28388	267267	1028462	5.0	15.9	230.7
CS11-20_25	163	7999	642	1837	15414	47357	6.3	0.7	13.3
CS11-20_26	183	282971	28886	31197	448962	1473249	5.9	26.4	387.5
CS11-20_27	-65	274248	22495	31263	243901	1528452	3.1	25.6	210.5
CS11-20_28	23	71986	13499	24096	81311	160435	9.8	6.7	70.2
CS11-20_29	-172	38283	2826	10457	98006	238319	7.9	3.6	84.6
CS11-20_30	67	138745	10847	29414	305712	874016	6.8	13.0	263.8
CS11-20_31	53	114112	17220	26885	102641	289623	6.8	10.7	88.6
CS11-20_32	-283	141581	14172	43006	337626	887410	7.3	13.2	291.4
CS11-20_33	418	331667	36966	62854	382130	1258267	5.9	31.0	329.8
CS11-20_34	-138	34934	2720	5055	47652	225414	4.1	3.3	41.1
CS11-20_35	66	97216	12061	59813	334991	391643	16.5	9.1	289.1
CS11-20_36	40	208159	18626	32334	250670	1043597	4.6	19.4	216.3
CS11-20_37	-303	262121	28698	21722	123199	923659	2.6	24.5	106.3
CS11-20_38	225	613167	46418	166691	1647444	4305087	7.4	57.3	1421.8
CS11-20_39	66	148533	15343	46735	286634	594200	9.3	13.9	247.4
CS11-20_40	259	430053	40236	49403	312928	1996811	3.0	40.2	270.1
CS11-20_41	-94	596772	62180	123014	653739	2282727	5.5	55.7	564.2
CS11-20_42	24	439344	45800	28433	154445	1603723	1.9	41.0	133.3
CS11-20_43	133	473584	51376	45635	248760	1772466	2.7	44.2	214.7
CS11-20_44	4	281196	29480	48976	294307	1152633	4.9	26.3	254.0
CS11-20_45	385	371903	41400	45217	494693	1646233	5.8	34.7	426.9
CS11-20_46	-3	47248	4162	20458	162461	250335	12.5	4.4	140.2
CS11-20_47	451	52529	4037	9281	86195	311272	5.3	4.9	74.4
CS11-20_48	-326	1305206	143146	127599	746713	5147858	2.8	121.9	644.5

CS11-20_49	183	29997	3084	12100	75524	122283	11.9	2.8	65.2
CS11-20_50	473	151275	12270	178597	1500984	919622	31.5	14.1	1295.4
CS11-20_51	363	200457	18344	44858	336685	947943	6.9	18.7	290.6
CS11-20_52	54	348440	35417	102424	635591	1350907	9.1	32.6	548.5
CS11-20_53	89	198489	16421	37098	450869	1297210	6.7	18.5	389.1
CS11-20_54	393	417129	45747	51965	759554	3143890	4.7	39.0	655.5
CS11-20_55	12	244657	23345	256455	1683940	1104446	29.4	22.9	1453.3
CS11-20_56	-100	213326	21361	51197	330353	846441	7.5	19.9	285.1
CS11-20_57	98	328832	31371	70805	480132	1429903	6.5	30.7	414.4
CS11-20_58	-33	207855	23470	19888	191909	858659	4.3	19.4	165.6
CS11-20_59	126	41029	3665	14321	118561	217863	10.5	3.8	102.3
CS11-20_60	80	153373	17013	15059	88590	544487	3.1	14.3	76.5
CS11-20_62	229	256291	21625	28369	241798	1238967	3.8	23.9	208.7
CS11-20_62	-149	1470249	160943	106643	578893	5271132	2.1	137.3	499.6
CS11-20_63	-32	124754	10852	16773	122717	599777	3.9	11.7	105.9
CS11-20_64	395	171032	17337	41964	261145	664866	7.6	16.0	225.4
CS11-20_65	264	720280	76991	229639	2080840	4265132	9.4	67.3	1795.9
CS11-20_66	337	453270	48387	47680	270208	1658774	3.1	42.3	233.2
CS11-20_67	227	486907	38951	108475	1288173	3433551	7.2	45.5	1111.8
CS11-20_68	147	116503	12448	12330	74975	429598	3.4	10.9	64.7
CS11-20_69	-6	288553	31308	71257	556787	1834363	5.9	27.0	480.5
CS11-20_70	312	464255	94119	146612	522043	958124	10.5	43.4	450.5
CS11-20_71	280	354176	38848	46934	376918	1490733	4.9	33.1	325.3
CS11-20_72	269	290452	29025	41509	255060	1126273	4.4	27.1	220.1
CS11-20_73	-28	541796	55041	81915	528214	2319484	4.4	50.6	455.9
CS11-20_74	-143	89790	9476	7280	44076	326292	2.6	8.4	38.0
CS11-20_75	102	98380	11041	11795	60247	357984	3.2	9.2	52.0
CS11-20_76	-21	63619	11288	14604	54363	146593	7.2	5.9	46.9

Uppm	$^{238}U/^{206}Pb$	1s %	$^{207}Pb/^{206}Pb$	1s %	$^{207}Pb/^{235}U$	1s %	$^{206}Pb/^{238}U$	1s %	Rho
17.3	4.6117	1.38	0.0861	1.14	2.5730	1.76	0.2168	1.70	0.78
25.5	5.1429	1.20	0.0844	1.12	2.2623	1.62	0.1944	1.57	0.74
27.4	5.3724	1.17	0.0775	1.32	1.9883	1.75	0.1861	1.54	0.67
24.3	2.8705	1.22	0.1213	0.99	5.8233	1.55	0.3484	1.58	0.79
100.6	5.1135	1.30	0.0853	1.05	2.2984	1.64	0.1956	1.64	0.79
13.8	6.1646	1.27	0.0758	1.16	1.6938	1.70	0.1622	1.62	0.75
13.0	3.5053	1.34	0.1022	1.12	4.0182	1.72	0.2853	1.67	0.78
45.6	3.4866	1.10	0.1033	1.01	4.0814	1.47	0.2868	1.49	0.75
41.2	3.3369	1.25	0.0998	1.07	4.1215	1.63	0.2997	1.60	0.77
10.7	5.4069	1.45	0.0796	1.64	2.0277	2.17	0.1849	1.76	0.67
44.9	3.4760	0.88	0.1075	0.94	4.2616	1.26	0.2877	1.33	0.70
39.6	3.2683	1.32	0.1048	0.92	4.4211	1.58	0.3060	1.66	0.83
119.8	1.9678	0.97	0.1869	0.97	13.0909	1.34	0.5082	1.40	0.72
126.5	4.2100	1.48	0.1128	0.88	3.6927	1.70	0.2375	1.79	0.87
21.3	4.4077	1.55	0.0858	1.23	2.6822	1.96	0.2269	1.84	0.79
15.8	3.3873	1.36	0.1026	1.04	4.1749	1.69	0.2952	1.69	0.80
13.6	3.2649	1.69	0.1095	1.38	4.6203	2.16	0.3063	1.97	0.78
29.6	3.1689	1.11	0.1076	1.01	4.6794	1.48	0.3156	1.50	0.75
20.4	3.9939	1.23	0.0965	1.04	3.3300	1.59	0.2504	1.59	0.77
75.3	4.8353	1.11	0.0876	0.99	2.4962	1.46	0.2068	1.50	0.76
84.9	2.3796	0.84	0.1683	0.91	9.7470	1.21	0.4202	1.31	0.69
44.9	3.6921	1.27	0.1019	1.04	3.8029	1.62	0.2708	1.62	0.78
46.0	5.3138	0.99	0.0835	0.97	2.1650	1.35	0.1882	1.41	0.73
2.1	5.1855	3.41	0.0776	2.89	2.0619	4.47	0.1928	3.56	0.76
65.9	4.5916	1.18	0.1005	0.81	3.0178	1.40	0.2178	1.55	0.84
68.3	4.9202	1.24	0.0824	1.09	2.3075	1.63	0.2032	1.59	0.76
7.2	1.9576	1.49	0.1880	1.39	13.2331	2.02	0.5108	1.80	0.74
10.7	5.6030	1.65	0.0738	1.69	1.8150	2.34	0.1785	1.93	0.70
39.1	5.5707	1.13	0.0778	0.97	1.9238	1.46	0.1795	1.51	0.77
12.9	2.2794	1.31	0.1542	1.06	9.3214	1.67	0.4387	1.65	0.79
39.7	5.5973	1.45	0.0989	0.92	2.4341	1.70	0.1787	1.77	0.86
56.3	3.2534	0.91	0.1095	0.93	4.6368	1.27	0.3074	1.35	0.71
10.1	5.6786	1.22	0.0762	1.37	1.8486	1.81	0.1761	1.58	0.67
17.5	3.5721	1.28	0.1216	1.87	4.6934	2.25	0.2799	1.63	0.57
46.7	4.3994	1.16	0.0890	1.13	2.7867	1.60	0.2273	1.54	0.73
41.3	3.1426	1.02	0.1096	0.91	4.8084	1.34	0.3182	1.43	0.76
192.5	6.1263	1.06	0.0761	0.91	1.7126	1.37	0.1632	1.46	0.77
26.6	3.4947	0.98	0.1017	0.97	4.0119	1.35	0.2861	1.40	0.73
89.3	4.1110	0.81	0.0935	0.89	3.1350	1.17	0.2433	1.29	0.69
102.1	3.3316	0.76	0.1039	0.66	4.2994	0.97	0.3002	1.26	0.79
71.7	3.1919	0.93	0.1055	0.88	4.5570	1.25	0.3133	1.37	0.74
79.2	3.2533	0.97	0.1069	0.97	4.5283	1.35	0.3074	1.40	0.72
51.5	3.5595	0.82	0.1031	0.95	3.9929	1.22	0.2809	1.30	0.67
73.6	3.8703	1.12	0.1089	0.91	3.8781	1.41	0.2584	1.50	0.79
11.2	4.6544	1.45	0.0876	1.43	2.5944	2.02	0.2149	1.76	0.72
13.9	5.4278	1.54	0.0769	1.32	1.9523	2.01	0.1842	1.84	0.77
230.2	3.4615	1.17	0.1092	0.70	4.3475	1.34	0.2889	1.54	0.88

5.5	3.5262	2.12	0.0995	1.60	3.8882	2.64	0.2836	2.34	0.80
41.1	5.2726	1.01	0.0794	0.94	2.0755	1.35	0.1897	1.42	0.75
42.4	4.0363	1.05	0.0905	0.89	3.0908	1.35	0.2477	1.45	0.78
60.4	3.4303	1.09	0.1023	0.94	4.1099	1.41	0.2915	1.48	0.77
58.0	5.5765	1.09	0.0801	1.05	1.9803	1.49	0.1793	1.48	0.73
140.6	6.7813	1.43	0.1096	0.93	2.2278	1.68	0.1475	1.74	0.85
49.4	3.8863	1.00	0.0939	0.76	3.3284	1.23	0.2573	1.42	0.82
37.8	3.4421	1.03	0.0992	0.66	3.9737	1.19	0.2905	1.44	0.87
63.9	3.8599	0.86	0.0949	0.87	3.3900	1.20	0.2591	1.32	0.72
38.4	3.6425	1.29	0.1115	0.80	4.2200	1.50	0.2745	1.64	0.87
9.7	4.5468	1.38	0.0885	1.08	2.6827	1.73	0.2199	1.71	0.80
24.3	3.1064	1.07	0.1102	0.97	4.8904	1.42	0.3219	1.46	0.75
55.4	4.2610	1.23	0.0852	0.87	2.7544	1.48	0.2347	1.58	0.83
235.7	3.1151	0.99	0.1084	0.82	4.7978	1.26	0.3210	1.41	0.79
26.8	4.2425	1.21	0.0868	1.00	2.8213	1.54	0.2357	1.57	0.78
29.7	3.4265	0.91	0.1010	0.66	4.0637	1.09	0.2918	1.36	0.84
190.7	5.2460	1.17	0.1067	0.83	2.8019	1.41	0.1906	1.54	0.83
74.2	3.2012	0.69	0.1074	0.73	4.6242	0.97	0.3124	1.22	0.71
153.5	6.1358	0.97	0.0793	0.94	1.7816	1.32	0.1630	1.40	0.73
19.2	3.2184	1.11	0.1075	0.90	4.6046	1.41	0.3107	1.50	0.79
82.0	5.2891	3.67	0.1083	0.88	2.8232	3.76	0.1891	3.80	0.97
42.8	1.7858	0.85	0.1991	0.91	15.3657	1.22	0.5600	1.31	0.70
66.6	3.5960	1.12	0.1080	0.93	4.1378	1.43	0.2781	1.50	0.78
50.4	3.3947	1.01	0.1004	0.82	4.0766	1.27	0.2946	1.42	0.79
103.7	3.7054	1.00	0.1014	0.85	3.7701	1.28	0.2699	1.41	0.78
14.6	3.1734	1.21	0.1043	1.04	4.5299	1.57	0.3151	1.57	0.77
16.0	3.1701	1.40	0.1104	1.03	4.8016	1.71	0.3154	1.72	0.82
6.6	1.9781	1.67	0.1760	1.02	12.2618	1.94	0.5055	1.95	0.86

$^{207}Pb/^{206}Pb$	2s abs	$^{206}Pb/^{238}U$	2s abs	$^{207}Pb/^{235}U$	2s abs	6-38/7-6	6-38/7-35
1340.3968	21.97	1265.2	39.0	1293.0	25.5	6%	2%
1302.2829	21.762	1145.4	32.8	1200.6	22.6	12%	5%
1134.3343	26.355	1100.4	31.1	1111.6	23.3	3%	1%
1975.2573	17.649	1926.8	52.4	1949.9	26.5	2%	1%
1321.9142	20.256	1151.4	34.5	1211.8	23.0	13%	5%
1088.8677	23.227	969.1	29.1	1006.2	21.5	11%	4%
1664.4784	20.648	1617.9	47.7	1637.9	27.6	3%	1%
1683.4253	18.717	1625.6	42.6	1650.6	23.7	3%	2%
1620.1657	19.975	1689.7	47.5	1658.6	26.2	-4%	-2%
1185.8988	32.416	1094.0	35.3	1124.8	29.1	8%	3%
1757.1881	17.232	1630.0	38.3	1686.0	20.5	7%	3%
1711.5570	16.89	1720.9	49.8	1716.3	25.9	-1%	0%
2715.2086	15.933	2648.9	60.4	2686.2	25.0	2%	1%
1845.0514	15.929	1373.8	44.1	1569.8	26.8	26%	12%
1333.2680	23.754	1318.1	43.8	1323.6	28.5	1%	0%
1671.9019	19.262	1667.6	49.5	1669.1	27.3	0%	0%
1790.3476	25.082	1722.4	59.2	1752.9	35.5	4%	2%
1759.0877	18.407	1768.0	46.2	1763.6	24.4	-1%	0%
1557.5626	19.59	1440.4	40.9	1488.1	24.6	8%	3%
1373.2178	19.084	1211.8	33.0	1270.9	21.0	12%	5%
2540.7607	15.273	2261.6	49.6	2411.2	22.0	11%	6%
1658.6183	19.348	1545.1	44.3	1593.4	25.8	7%	3%
1280.3689	18.867	1111.6	28.6	1169.9	18.6	13%	5%
1136.1326	57.526	1136.8	73.8	1136.2	59.3	0%	0%
1634.1561	14.964	1270.2	35.6	1412.1	21.2	22%	10%
1254.5175	21.342	1192.7	34.6	1214.6	22.8	5%	2%
2724.4719	22.972	2660.1	77.9	2696.4	37.5	2%	1%
1035.7129	34.044	1058.6	37.6	1050.9	30.2	-2%	-1%
1140.8354	19.351	1064.3	29.5	1089.4	19.4	7%	2%
2392.6802	18.094	2344.9	64.6	2370.1	30.1	2%	1%
1602.7029	17.135	1059.6	34.4	1252.7	24.2	34%	15%
1790.4021	16.996	1727.8	40.9	1755.9	21.0	3%	2%
1099.5231	27.378	1045.6	30.4	1062.9	23.6	5%	2%
1980.5475	33.333	1591.1	45.7	1766.1	37.0	20%	10%
1403.2427	21.741	1320.3	36.6	1352.0	23.7	6%	2%
1793.4795	16.566	1781.0	44.5	1786.4	22.3	1%	0%
1098.4648	18.306	974.7	26.3	1013.3	17.4	11%	4%
1655.9272	17.895	1622.3	40.1	1636.6	21.7	2%	1%
1498.3471	16.775	1403.6	32.4	1441.3	17.8	6%	3%
1695.4906	12.187	1692.1	37.4	1693.2	15.9	0%	0%
1723.7779	16.149	1756.9	42.0	1741.4	20.6	-2%	-1%
1747.1284	17.787	1727.8	42.2	1736.2	22.2	1%	0%
1681.1089	17.484	1596.1	36.5	1632.7	19.7	5%	2%
1781.2545	16.555	1481.5	39.6	1609.1	22.6	17%	8%
1374.0817	27.435	1254.6	40.1	1299.0	29.1	9%	3%
1118.3194	26.302	1090.1	36.8	1099.2	26.7	3%	1%
1786.0307	12.781	1636.0	44.4	1702.4	21.8	8%	4%

1614.4655	29.718	1609.4	66.4	1611.2	41.7	0%	0%
1182.2006	18.58	1119.5	29.2	1140.7	18.4	5%	2%
1436.5301	17.058	1426.9	37.0	1430.4	20.5	1%	0%
1666.2341	17.321	1649.1	42.9	1656.3	22.7	1%	0%
1200.1037	20.656	1063.3	29.0	1108.8	19.9	11%	4%
1793.0841	17	886.7	28.8	1189.8	23.3	51%	25%
1505.2311	14.446	1476.1	37.3	1487.7	19.1	2%	1%
1610.0072	12.233	1644.1	41.7	1628.8	19.2	-2%	-1%
1526.9702	16.481	1485.1	35.0	1502.1	18.6	3%	1%
1824.5841	14.474	1563.8	45.3	1677.9	24.3	14%	7%
1393.4539	20.732	1281.5	39.5	1323.7	25.3	8%	3%
1803.2073	17.69	1799.1	45.8	1800.6	23.6	0%	0%
1319.1413	16.863	1359.0	38.7	1343.3	21.8	-3%	-1%
1773.4386	14.987	1794.7	44.1	1784.5	21.0	-1%	-1%
1357.1571	19.222	1364.4	38.4	1361.2	22.8	-1%	0%
1643.1638	12.261	1650.7	39.4	1647.0	17.7	0%	0%
1743.0165	15.264	1124.7	31.8	1356.1	20.9	35%	17%
1755.9248	13.387	1752.4	37.2	1753.6	16.0	0%	0%
1180.1111	18.522	973.3	25.2	1038.8	17.0	18%	6%
1757.9796	16.537	1744.2	45.6	1750.1	23.2	1%	0%
1771.8264	16.101	1116.3	77.5	1361.7	54.9	37%	18%
2818.8352	14.941	2866.6	60.4	2838.2	22.9	-2%	-1%
1765.3448	17.029	1581.7	42.0	1661.8	23.1	10%	5%
1631.7492	15.204	1664.4	41.6	1649.6	20.5	-2%	-1%
1649.2733	15.7	1540.2	38.6	1586.4	20.3	7%	3%
1702.1299	19.086	1765.8	48.4	1736.5	25.8	-4%	-2%
1806.8087	18.654	1767.4	53.0	1785.2	28.4	2%	1%
2615.4959	17.017	2637.5	83.9	2624.7	35.8	-1%	0%

Sample	^{204}Pb	^{206}Pb	^{207}Pb	^{238}U	Pbppm	Uppm	^{238}U/^{206}Pb	1s %	^{207}Pb/^{206}Pb	1s %	^{207}Pb/^{235}U	1s %	^{206}Pb/^{238}U	1s %	Rho
Siam1_1	-20.7	1.5	0.1	**3.9**	16.8	45.0	2.684	1.30	0.122	0.69	6.277	1.47	0.373	1.30	0.883
Siam1_2	**-355.8**	0.7	0.1	**1.5**	8.1	17.6	2.177	2.24	0.119	1.78	7.559	2.86	0.459	2.24	0.784
Siam1_3	**431.9**	5.3	0.6	38.4	59.6	442.5	7.424	6.93	0.144	0.70	2.682	6.96	0.135	6.93	0.995
Siam1_4	-155.0	1.8	0.2	4.4	20.2	50.2	2.503	1.12	0.134	0.61	7.391	1.28	0.400	1.12	0.877
Siam1_5	44.1	0.5	0.0	**1.3**	5.3	14.9	2.836	2.00	0.117	1.93	5.683	2.78	0.353	2.00	0.720
Siam1_6	**456.1**	3.8	0.4	10.1	43.3	116.9	2.740	1.68	0.118	0.32	5.938	1.71	0.365	1.68	0.983
Siam1_7	**319.1**	6.3	0.6	17.1	71.2	197.1	2.843	0.81	0.115	0.24	5.567	0.84	0.352	0.81	0.960
Siam1_8	98.7	1.5	0.2	**3.5**	16.8	40.4	2.477	0.65	0.134	0.69	7.476	0.95	0.404	0.65	0.685
Siam1_9	-183.4	0.8	0.1	**1.9**	8.9	22.2	2.575	0.69	0.133	1.20	7.120	1.38	0.388	0.69	0.498
Siam1_10	**686.5**	6.6	0.6	19.1	75.2	220.0	2.992	1.16	0.116	0.24	5.352	1.18	0.334	1.16	0.980
Siam1_11	236.6	2.4	0.2	6.7	25.0	68.8	2.801	0.83	0.123	0.65	6.044	1.05	0.357	0.83	0.786
Siam1_13	-52.5	5.5	0.8	11.0	56.2	114.0	2.023	1.48	0.176	0.86	12.023	1.72	0.494	1.48	0.865
Siam1_14	-3.9	2.8	0.3	8.3	28.5	85.8	3.026	1.28	0.118	0.47	5.358	1.37	0.330	1.28	0.939
Siam1_15	-128.9	3.3	0.3	10.7	34.3	111.2	3.280	1.25	0.122	0.41	5.134	1.32	0.305	1.25	0.950
Siam1_20	**-360.3**	5.0	0.6	12.6	51.8	130.6	2.548	1.04	0.133	0.25	7.217	1.07	0.393	1.04	0.971
Siam1_17	-50.8	1.1	0.1	**2.6**	10.9	26.7	2.476	3.78	0.112	1.08	6.263	3.94	0.404	3.78	0.961
Siam1_18	71.4	1.6	0.2	4.1	17.0	42.8	2.535	1.33	0.135	0.73	7.324	1.52	0.394	1.33	0.878
Siam1_19	**-369.7**	0.8	0.1	**1.9**	8.3	19.8	2.398	5.09	0.119	1.35	6.858	5.26	0.417	5.09	0.967
Siam1_22	**389.4**	0.6	0.1	**1.6**	6.5	16.8	2.613	1.09	0.132	1.41	6.991	1.78	0.383	1.09	0.612
Siam1_23	**405.3**	12.5	1.2	37.5	128.4	387.9	3.057	1.15	0.113	0.23	5.116	1.17	0.327	1.15	0.981
Siam1_24	76.5	0.6	0.1	**1.6**	6.5	16.4	2.527	2.15	0.135	1.39	7.357	2.56	0.396	2.15	0.839
Siam1_25	226.5	1.3	0.1	**3.2**	13.9	33.4	2.408	1.13	0.134	0.70	7.656	1.33	0.415	1.13	0.851
Siam1_26	156.6	7.6	0.8	22.6	78.7	234.2	2.988	1.96	0.122	0.32	5.608	1.99	0.335	1.96	0.987
Siam1_28	59.3	1.0	0.1	**2.2**	10.4	23.0	2.221	6.92	0.119	0.99	7.396	6.99	0.450	6.92	0.990
Siam1_29	153.1	3.7	0.4	10.5	37.7	108.6	2.921	3.58	0.116	0.44	5.477	3.61	0.342	3.58	0.993
Siam1_30	**421.9**	4.3	0.7	7.6	44.4	78.2	1.778	3.28	0.202	0.19	15.637	3.29	0.562	3.28	0.998
Siam1_88	-9.3	0.9	0.1	2.4	10.6	25.1	2.461	1.75	0.133	0.95	7.424	2.00	0.406	*1.75*	0.879
Siam1_89	-14.3	1.5	0.2	4.0	17.1	41.5	2.517	1.50	0.133	0.68	7.307	1.65	0.397	*1.50*	0.911
Siam1_90	95.4	1.6	0.2	4.3	18.1	44.7	2.549	1.79	0.133	0.62	7.206	1.89	0.392	*1.79*	0.944
Siam1_91	249.2	2.1	0.4	3.7	23.5	38.5	1.694	1.82	0.217	0.47	17.663	1.88	0.590	*1.82*	0.968
Siam1_92	200.3	0.8	0.1	2.1	8.7	21.5	2.559	1.68	0.135	1.12	7.253	2.02	0.391	*1.68*	0.832
Siam1_93	-2.9	3.5	0.3	10.9	39.8	112.1	2.911	1.33	0.116	0.37	5.515	1.39	0.343	*1.33*	0.963
Siam1_94	183.8	2.0	0.2	5.5	23.1	56.7	2.547	1.28	0.133	0.48	7.200	1.36	0.393	*1.28*	0.937

Siam1_95	210.6	1.4	0.1	4.4	16.2	45.8	2.923	1.44	0.117	0.83	5.496	1.66	0.342	*1.44*	0.866
Siam1_96	36.1	3.2	0.4	9.0	36.4	92.6	2.605	1.35	0.134	0.32	7.088	1.39	0.384	*1.35*	0.972
Siam1_97	5.9	5.9	0.9	12.8	67.1	132.0	2.026	1.30	0.181	0.21	12.324	1.32	0.494	*1.30*	0.987
Siam1_98	442.1	8.5	1.4	16.9	96.5	174.3	1.848	1.33	0.194	0.14	14.475	1.34	0.541	*1.33*	0.994
Siam1_99	397.3	4.7	0.6	11.3	53.8	116.7	2.216	1.87	0.154	0.20	9.602	1.88	0.451	*1.87*	0.995
Siam1_100	401.4	2.5	0.3	6.9	28.0	71.4	2.581	1.65	0.133	0.43	7.130	1.71	0.387	*1.65*	0.968
Siam1_101	433.1	6.7	1.2	12.9	76.6	133.0	1.768	1.38	0.211	0.19	16.488	1.40	0.566	*1.38*	0.991
Siam1_102	58.6	9.5	0.9	31.0	108.5	319.5	3.003	1.54	0.115	0.19	5.261	1.55	0.333	*1.54*	0.992
Siam1_103	213.8	1.5	0.2	4.1	16.6	42.6	2.607	1.35	0.133	0.73	7.008	1.54	0.384	*1.35*	0.881
Siam1_104	406.3	1.3	0.1	3.6	14.5	36.6	2.581	1.47	0.133	0.74	7.106	1.65	0.387	*1.47*	0.893
Siam1_105	294.0	3.7	0.4	11.4	42.5	117.4	2.815	1.39	0.120	0.33	5.882	1.43	0.355	*1.39*	0.973
Siam1_106	99.1	2.0	0.2	5.5	22.4	56.6	2.571	1.32	0.133	0.56	7.127	1.43	0.389	*1.32*	0.921
Siam1_107	1080.2	6.8	0.9	30.3	77.0	312.3	4.064	3.39	0.153	2.10	5.187	3.99	0.246	3.39	0.850
Siam1_108	117.4	0.9	0.1	2.4	10.0	24.8	2.468	1.23	0.131	1.06	7.316	1.62	0.405	1.23	0.759
Siam1_109	171.7	0.3	0.0	0.8	3.4	8.4	2.513	1.49	0.136	2.43	7.435	2.85	0.398	1.49	0.522
Siam1_110	-115.2	1.0	0.1	2.8	11.4	28.6	2.536	1.38	0.136	1.15	7.398	1.80	0.394	1.38	0.769
Siam1_111	-59.3	6.0	0.6	19.1	68.4	197.1	2.917	1.40	0.115	0.24	5.442	1.43	0.343	1.40	0.985
Siam1_112	89.0	3.6	0.6	7.4	40.7	76.5	1.897	1.63	0.187	0.36	13.588	1.67	0.527	1.63	0.976
Siam1_113	89.2	9.9	1.0	32.2	112.5	331.8	2.981	1.59	0.116	0.32	5.375	1.62	0.336	1.59	0.981
Siam1_114	-113.2	1.7	0.3	3.5	19.4	36.2	1.886	1.51	0.190	0.42	13.892	1.57	0.530	1.51	0.964
Siam1_115	-26.2	1.3	0.1	4.1	14.9	42.6	2.886	1.77	0.119	0.78	5.666	1.93	0.346	1.77	0.914
Siam1_116	237.8	2.5	0.4	5.2	28.6	53.4	1.889	1.58	0.188	0.36	13.686	1.62	0.529	1.58	0.975
Siam1_86	14.8	3.3	0.5	6.6	37.0	68.1	1.853	1.54	0.190	0.30	14.153	1.57	0.540	*1.54*	0.981
Siam1_72	10.2	1.0	0.1	2.7	11.0	27.4	2.502	1.90	0.132	0.96	7.288	2.13	0.400	*1.90*	0.892
Siam1_73	-167.9	4.7	0.5	14.7	53.1	151.6	2.872	1.66	0.117	0.29	5.636	1.69	0.348	*1.66*	0.985
Siam1_74	-24.2	5.9	0.6	19.2	67.6	198.3	2.943	2.18	0.118	0.24	5.525	2.20	0.340	*2.18*	0.994
Siam1_75	162.2	5.5	1.2	9.4	62.4	97.3	1.567	1.84	0.255	0.29	22.460	1.86	0.638	*1.84*	0.988
Siam1_76	330.8	2.8	0.3	8.6	31.9	88.8	2.799	1.48	0.117	0.43	5.784	1.54	0.357	*1.48*	0.960
Siam1_77	244.3	2.5	0.2	8.2	28.7	84.5	2.959	1.57	0.115	0.49	5.365	1.64	0.338	*1.57*	0.954
Siam1_78	113.6	1.6	0.2	4.5	18.3	46.0	2.522	1.55	0.134	0.62	7.319	1.67	0.396	*1.55*	0.929
Siam1_79	670.7	3.5	0.5	7.2	39.7	74.7	1.870	1.35	0.188	0.30	13.850	1.38	0.535	*1.35*	0.976
Siam1_80	355.1	1.4	0.2	4.0	16.4	41.2	2.518	1.42	0.133	0.82	7.302	1.64	0.397	*1.42*	0.864
Siam1_31	161.0	1.4	0.1	4.4	16.3	45.8	2.818	1.54	0.115	0.72	5.624	1.70	0.355	*1.54*	0.905
Siam1_32	356.5	2.6	0.4	5.7	29.7	59.1	1.997	1.40	0.169	0.43	11.701	1.46	0.501	*1.40*	0.957

Siam1_33	0.1	0.9	0.1	2.3	9.8	23.9	2.445	1.50	0.132	1.07	7.462	1.84	0.409	*1.50*	0.816
Siam1_34	225.3	0.7	0.1	1.5	7.4	15.0	2.020	1.59	0.161	1.05	10.994	1.91	0.495	*1.59*	0.836
Siam1_35	365.2	2.7	0.3	8.3	30.4	85.8	2.833	1.59	0.117	0.50	5.714	1.67	0.353	*1.59*	0.954
Siam1_36	389.4	2.2	0.4	4.5	25.5	46.3	1.818	1.48	0.195	0.34	14.771	1.52	0.550	*1.48*	0.974
Siam1_37	577.6	7.0	1.1	15.0	80.2	154.4	1.930	1.69	0.187	0.20	13.380	1.71	0.518	*1.69*	0.993
Siam1_38	266.4	6.3	0.6	19.9	71.3	205.5	2.888	1.45	0.117	0.24	5.571	1.47	0.346	*1.45*	0.986
Siam1_39	245.4	1.3	0.1	3.8	14.4	39.3	2.742	1.47	0.125	0.79	6.278	1.67	0.365	*1.47*	0.880
Siam1_40	214.9	0.4	0.0	1.2	4.9	12.0	2.446	1.66	0.131	1.85	7.405	2.49	0.409	*1.66*	0.669
Siam1_41	196.2	4.4	0.4	14.1	50.5	144.8	2.871	1.48	0.116	0.32	5.561	1.51	0.348	*1.48*	0.977
Siam1_42	145.5	5.9	0.6	19.2	67.5	197.8	2.935	1.41	0.113	0.26	5.315	1.43	0.341	*1.41*	0.983
Siam1_44	298.3	7.2	1.1	15.0	82.5	154.2	1.874	1.61	0.187	0.16	13.733	1.61	0.534	*1.61*	0.995
Siam1_45	-44.5	2.2	0.2	6.0	24.8	61.4	2.480	1.59	0.134	0.45	7.431	1.65	0.403	*1.59*	0.963
Siam1_46	262.7	0.9	0.1	2.5	10.3	25.5	2.493	1.68	0.133	0.94	7.363	1.92	0.401	*1.68*	0.872
Siam1_47	1299.1	9.1	1.4	38.4	103.0	395.4	3.840	4.39	0.180	0.73	6.474	4.45	0.260	*4.39*	0.987
Siam1_48	412.3	2.6	0.3	7.2	29.7	74.3	2.502	1.68	0.133	0.46	7.302	1.74	0.400	*1.68*	0.964
Siam1_49	38.3	2.6	0.3	7.8	29.3	80.6	2.753	1.79	0.121	0.55	6.053	1.87	0.363	*1.79*	0.956
Siam1_50	142.0	1.0	0.1	3.1	11.2	32.2	2.877	1.81	0.116	1.00	5.547	2.06	0.348	*1.81*	0.876
Siam1_51	23.8	3.7	0.4	12.0	42.5	123.7	2.926	1.44	0.128	0.90	6.038	1.70	0.342	*1.44*	0.847
Siam1_52	-102.4	1.8	0.3	3.7	20.9	37.8	1.815	1.83	0.194	0.52	14.704	1.90	0.551	*1.83*	0.962
Siam1_53	-104.7	1.1	0.1	3.1	13.0	31.7	2.421	1.33	0.135	0.83	7.682	1.57	0.413	*1.33*	0.848
Siam1_54	-115.7	3.0	0.3	9.5	34.0	97.4	2.874	1.85	0.116	0.47	5.576	1.91	0.348	*1.85*	0.969
Siam1_55	-122.9	4.3	0.5	11.0	48.7	112.9	2.325	2.10	0.146	0.33	8.649	2.12	0.430	*2.10*	0.988
Siam1_56	44.8	2.9	0.5	6.1	33.3	62.7	1.890	2.04	0.189	0.35	13.801	2.07	0.529	*2.04*	0.986
Siam1_57	47.9	0.9	0.1	2.4	9.7	25.1	2.560	2.20	0.132	1.01	7.114	2.42	0.391	*2.20*	0.909
Siam1_59	-37.8	5.9	0.9	12.2	66.7	125.4	1.891	1.49	0.190	0.19	13.836	1.51	0.529	*1.49*	0.992
Siam1_60	92.9	8.2	0.8	31.5	93.0	324.6	3.444	4.64	0.119	0.80	4.756	4.70	0.290	*4.64*	0.985
Siam1_ex2a	124.0	0.8	0.1	2.8	10.1	28.8	2.896	2.01	**0.118**	1.30	5.614	2.39	0.345	2.01	0.840
Siam1_ex2b	-37.0	1.0	0.1	3.5	12.8	36.1	2.869	2.00	**0.117**	1.13	5.612	2.29	0.349	2.00	0.871
Siam1_ex2c	112.2	0.8	0.1	2.8	10.0	28.7	2.906	1.89	**0.116**	1.22	5.520	2.25	0.344	1.89	0.839
Siam1_ex2d	421.3	1.3	0.1	4.6	16.7	47.8	2.903	2.05	**0.116**	0.82	5.528	2.21	0.344	2.05	0.929
Siam1_ex3a	122.7	2.4	0.3	7.3	31.2	75.6	2.463	2.03	**0.134**	0.50	7.528	2.09	0.406	2.03	0.972
Siam1_ex3b	24.4	2.0	0.2	5.9	25.0	61.6	2.502	1.98	**0.135**	0.54	7.421	2.06	0.400	1.98	0.965
Siam1_ex3c	48.2	2.0	0.2	5.9	25.0	61.7	2.511	2.04	**0.136**	0.77	7.458	2.18	0.398	2.04	0.935
Siam1_ex3d	192.0	0.5	0.1	1.4	6.0	14.5	2.467	1.98	**0.135**	1.61	7.537	2.55	0.405	1.98	0.776

Siam1_ex3e	-57.8	0.6	0.1	2.8	7.4	29.3	3.968	3.75	**0.131**	1.68	4.552	4.11	0.252	3.75	0.913
Siam1_ex3f	-153.8	0.8	0.1	2.6	10.8	26.5	2.501	2.20	**0.138**	1.08	7.596	2.45	0.400	2.20	0.897
Siam1_ex4	232.6	3.5	0.4	13.0	44.8	135.0	3.058	2.48	**0.119**	0.75	5.369	2.59	0.327	2.48	0.957
Siam1_ex5	92.3	2.4	0.3	5.9	30.1	60.8	2.055	2.04	**0.168**	0.37	11.252	2.07	0.487	2.04	0.984
Siam1_ex6a	310.7	1.4	0.2	4.2	18.0	43.8	2.446	1.90	**0.133**	0.68	7.518	2.02	0.409	1.90	0.941
Siam1_ex6b	308.3	1.8	0.2	5.5	23.2	57.2	2.505	2.11	**0.133**	0.55	7.335	2.18	0.399	2.11	0.968
Siam1_ex6c	57.6	1.7	0.2	5.1	21.5	53.0	2.509	2.01	**0.133**	0.71	7.295	2.13	0.399	2.01	0.944
Siam1_ex6d	224.3	0.6	0.1	1.7	7.2	17.8	2.517	2.41	**0.134**	1.45	7.352	2.81	0.397	2.41	0.857
Siam1_ex7a	1490.1	9.4	2.0	26.2	119.9	272.6	2.238	5.06	**0.249**	1.37	15.315	5.24	0.447	5.06	0.965
Siam1_ex7b	44.5	0.7	0.1	2.0	9.5	21.0	2.247	1.95	**0.191**	0.83	11.741	2.12	0.445	1.95	0.920
Siam1_ex7c	175.9	1.5	0.2	3.5	19.1	36.4	1.927	2.16	**0.185**	0.49	13.234	2.22	0.519	2.16	0.975
Siam1_ex7d	-80.6	3.5	0.6	8.2	45.1	84.8	1.911	2.15	**0.187**	0.26	13.498	2.16	0.523	2.15	0.993
Siam1_ex8a	37.1	1.6	0.2	4.8	19.9	50.3	2.560	2.01	**0.133**	0.70	7.145	2.12	0.391	2.01	0.945
Siam1_ex8b	106.6	2.9	0.3	8.9	36.5	92.1	2.560	1.99	**0.133**	0.41	7.159	2.03	0.391	1.99	0.980
Siam1_ex8c	53.3	0.8	0.1	3.2	10.4	33.0	3.186	3.32	**0.153**	2.03	6.624	3.89	0.314	3.32	0.853
Siam1_ex9a	-284.2	1.1	0.1	3.3	13.4	33.9	2.563	2.23	**0.132**	0.85	7.093	2.39	0.390	2.23	0.934
Siam1_ex9b	165.4	1.7	0.2	5.3	21.8	55.4	2.574	2.14	**0.132**	0.64	7.095	2.23	0.388	2.14	0.958
Siam1_ex10a	220.3	7.9	1.7	15.7	100.5	162.7	1.625	2.22	**0.262**	0.10	22.194	2.22	0.615	2.22	0.999
Siam1_ex10b	-84.6	2.3	0.3	7.0	28.9	73.2	2.572	2.10	**0.132**	0.54	7.093	2.17	0.389	2.10	0.969
Siam1_ex11a	-131.3	1.9	0.2	5.9	24.7	61.3	2.522	2.15	**0.132**	0.52	7.226	2.21	0.397	2.15	0.972
Siam1_ex11b	122.2	0.6	0.1	1.9	7.8	19.7	2.575	1.97	**0.133**	1.37	7.106	2.40	0.388	1.97	0.821
Siam1_ex11c	330.1	1.7	0.2	6.3	22.3	65.9	3.001	2.23	**0.116**	0.59	5.307	2.30	0.333	2.23	0.967
Siam1_ex12	463.4	5.8	0.9	14.5	73.8	150.3	2.062	2.23	**0.180**	0.26	12.011	2.25	0.485	2.23	0.993
Siam1_ex13	232.9	1.7	0.3	4.5	22.1	46.3	2.128	2.09	**0.190**	0.47	12.332	2.15	0.470	2.09	0.975
Siam1_ex14	235.2	4.6	0.5	14.3	59.2	148.5	2.558	2.06	**0.132**	0.34	7.112	2.08	0.391	2.06	0.986
Siam1_ex15	-259.5	1.5	0.2	3.5	19.7	36.7	1.890	1.94	**0.191**	0.53	13.930	2.01	0.529	1.94	0.964
Siam1_ex16a	257.6	2.1	0.3	5.2	26.9	54.4	2.069	1.91	**0.193**	0.34	12.873	1.94	0.483	1.91	0.985
Siam1_ex16b	7.7	0.6	0.1	1.3	7.4	13.4	1.853	2.09	**0.194**	1.04	14.462	2.33	0.540	2.09	0.896
CS11-6_1	244.2	4.3	0.3	20.6	62.6	238.9	3.868	1.32	0.090	0.50	3.223	1.41	0.259	*1.32*	0.935
CS11-6_2	**325.3**	7.9	0.6	48.8	114.0	566.7	4.959	3.14	0.085	0.56	2.352	3.19	0.202	*3.14*	0.985
CS11-6_3	154.7	4.3	0.4	16.4	62.5	190.9	3.076	1.37	0.111	0.50	4.974	1.46	0.325	*1.37*	0.939
CS11-6_4	139.3	2.1	0.2	9.6	30.1	110.9	3.732	1.26	0.094	0.65	3.461	1.42	0.268	*1.26*	0.890
CS11-6_5	2.3	4.5	0.3	23.6	64.3	274.5	4.378	1.42	0.088	0.50	2.778	1.51	0.228	*1.42*	0.943

CS11-6_7	-75.6	9.5	0.8	36.9	136.6	428.7	3.185	1.08	0.107	0.50	4.618	1.19	0.314	*1.08*	0.908
CS11-6_8	-60.2	3.9	0.6	10.1	56.9	117.4	2.095	1.09	0.170	0.50	11.187	1.20	0.477	*1.09*	0.910
CS11-6_9	221.6	5.7	0.4	31.5	81.6	365.5	4.548	1.21	0.085	0.50	2.563	1.31	0.220	*1.21*	0.924
CS11-6_10	-238.5	2.6	0.2	15.2	36.9	176.6	4.856	1.06	0.078	0.63	2.224	1.23	0.206	*1.06*	0.861
CS11-6_11	174.3	3.2	0.4	9.0	45.5	105.0	2.359	0.98	0.163	0.50	9.542	1.10	0.424	*0.98*	0.891
CS11-6_12	235.2	2.0	0.2	8.3	29.3	96.0	3.327	1.19	0.106	0.67	4.375	1.36	0.301	*1.19*	0.872
CS11-6_13	134.6	0.8	0.1	**4.0**	11.2	46.0	4.126	1.03	0.088	1.63	2.944	1.93	0.242	*1.03*	0.533
CS11-6_14	228.2	2.1	0.1	11.7	30.3	135.6	4.543	1.06	0.084	0.69	2.537	1.26	0.220	*1.06*	0.840
CS11-6_15	**424.0**	2.0	0.1	12.4	29.1	144.3	5.039	1.10	0.078	0.76	2.130	1.34	0.198	*1.10*	0.825
CS11-6_16	**372.4**	5.2	0.4	24.9	74.8	288.7	3.933	1.45	0.090	0.50	3.155	1.54	0.254	*1.45*	0.946
CS11-6_17	**372.5**	5.3	0.4	30.9	77.0	358.6	4.717	1.86	0.084	0.57	2.462	1.94	0.212	*1.86*	0.955
CS11-6_18	**861.7**	8.3	0.7	47.3	119.1	549.4	4.673	1.64	0.096	4.39	2.823	4.69	0.214	*1.64*	0.349
CS11-6_19	**511.0**	1.2	0.1	5.8	17.2	67.7	3.993	1.44	0.097	1.01	3.365	1.76	0.250	*1.44*	0.818
CS11-6_20	**471.5**	7.3	1.0	17.7	104.6	204.9	2.022	1.56	0.171	0.50	11.629	1.64	0.495	*1.56*	0.953
CS11-6_21	-46.0	1.5	0.1	8.5	21.1	98.8	4.756	1.24	0.086	1.01	2.483	1.60	0.210	*1.24*	0.774
CS11-6_22	-103.1	8.0	0.6	35.4	115.9	411.4	3.620	1.59	0.097	0.50	3.676	1.66	0.276	*1.59*	0.954
CS11-6_24	-250.2	2.8	0.2	12.8	39.8	148.4	3.780	1.54	0.095	0.53	3.481	1.63	0.265	*1.54*	0.945
CS11-6_25	192.0	5.0	0.4	22.7	71.6	263.4	3.735	1.53	0.096	0.50	3.525	1.61	0.268	*1.53*	0.950
CS11-6_27	-64.4	12.3	1.1	49.7	177.3	577.1	3.308	1.92	0.108	0.50	4.512	1.98	0.302	*1.92*	0.968
CS11-6_28	241.5	1.2	0.1	5.0	16.6	57.9	3.541	1.33	0.100	1.03	3.880	1.68	0.282	*1.33*	0.791
CS11-6_29	97.3	2.4	0.2	12.0	34.6	139.3	4.094	1.00	0.089	0.62	2.984	1.18	0.244	*1.00*	0.852
CS11-6_30	-115.4	7.3	0.6	30.0	105.2	347.8	3.375	1.37	0.102	0.50	4.149	1.46	0.296	*1.37*	0.940
CS11-6_31	201.5	2.2	0.1	15.0	31.6	173.8	5.581	0.98	0.074	0.82	1.830	1.28	0.179	*0.98*	0.768
CS11-6_32	83.4	3.4	0.3	13.8	49.1	160.4	3.316	1.28	0.105	0.50	4.356	1.38	0.302	*1.28*	0.932
CS11-6_34	-44.7	2.7	0.2	14.4	39.4	167.6	4.320	1.55	0.086	0.53	2.729	1.64	0.231	*1.55*	0.946
CS11-6_35	-101.5	3.8	0.3	18.5	54.7	214.3	3.977	1.31	0.091	0.50	3.146	1.40	0.251	*1.31*	0.934
CS11-6_36	4.3	2.2	0.2	12.5	31.0	145.0	4.733	1.38	0.094	1.21	2.727	1.84	0.211	*1.38*	0.751
CS11-6_37	-185.6	2.1	0.1	12.6	29.7	145.7	4.855	1.03	0.081	0.74	2.295	1.27	0.206	*1.03*	0.812
CS11-6_38	161.5	4.0	0.4	15.1	57.5	175.5	3.099	1.28	0.113	0.50	5.031	1.38	0.323	*1.28*	0.932
CS11-6_39	-107.2	2.5	0.2	13.2	36.3	153.1	4.284	1.40	0.087	0.61	2.785	1.53	0.233	*1.40*	0.917
CS11-6_40	78.9	4.4	0.3	24.3	62.7	281.7	4.561	1.46	0.083	0.50	2.502	1.54	0.219	*1.46*	0.946
CS11-6_41	**314.4**	3.4	0.3	15.4	48.8	179.0	3.741	1.53	0.095	0.50	3.492	1.61	0.267	*1.53*	0.950
CS11-6_42	184.9	3.8	0.3	15.0	55.3	173.7	3.186	1.12	0.108	0.50	4.680	1.23	0.314	*1.12*	0.913
CS11-5_45	-74.3	1.5	0.1	8.7	21.3	101.4	4.827	1.15	0.082	0.92	2.348	1.47	0.207	*1.15*	0.782

CS11-5_46	-53.8	1.8	0.2	5.9	25.4	68.9	2.756	1.17	0.121	0.59	6.077	1.31	0.363	*1.17*	0.892
CS11-5_47	156.1	2.9	0.2	16.5	41.5	191.7	4.681	1.37	0.082	0.56	2.407	1.48	0.214	1.37	0.925
CS11-5_48	69.8	2.8	0.5	5.8	39.8	67.7	1.724	1.46	0.215	0.50	17.197	1.54	0.580	1.46	0.946
CS11-5_50	86.0	6.9	0.5	39.6	99.4	459.3	4.665	1.23	**0.082**	0.50	2.411	1.32	0.214	1.23	0.926
CS11-5_51	146.5	3.6	0.3	16.1	51.3	186.6	3.687	1.20	**0.095**	0.57	3.534	1.33	0.271	1.20	0.904
CS11-6_53	187.2	3.9	0.3	18.9	55.5	219.9	4.016	1.51	**0.091**	0.50	3.132	1.59	0.249	1.51	0.949
CS11-6_54	36.4	7.2	0.5	47.9	103.5	556.3	5.406	1.88	**0.080**	0.50	2.032	1.94	0.185	1.88	0.966
CS11-6_55	457.5	4.5	0.4	20.4	64.7	237.3	3.722	1.26	**0.115**	3.06	4.248	3.31	0.269	1.26	**0.380**
CS11-6_56	169.2	5.7	0.6	21.1	82.5	245.0	3.015	1.47	**0.119**	0.50	5.463	1.56	0.332	1.47	0.947
CS11-6_57	-61.1	1.4	0.1	5.3	20.5	61.5	3.052	0.95	**0.111**	0.75	5.009	1.21	0.328	0.95	0.786
CS11-6_58	207.7	3.1	0.3	11.7	44.8	135.8	3.077	1.09	**0.110**	0.50	4.944	1.20	0.325	1.09	0.908
CS11-6_59	352.7	3.6	0.3	18.9	51.5	219.9	4.334	1.18	**0.088**	0.50	2.787	1.28	0.231	1.18	0.921
CS11-6_60	201.9	2.0	0.2	9.8	29.1	114.3	3.985	1.14	**0.093**	0.72	3.225	1.35	0.251	1.14	0.844
CS11-6_61	169.2	2.1	0.1	12.0	30.3	139.7	4.662	1.10	**0.083**	0.74	2.454	1.32	0.214	1.10	0.830
CS11-6_63	235.9	0.3	0.0	1.2	**3.8**	13.9	3.726	1.49	**0.092**	3.74	3.416	4.03	0.268	1.49	**0.371**
CS11-6_64	135.6	6.4	0.4	39.0	91.8	452.8	5.033	1.28	**0.081**	0.50	2.213	1.37	0.199	1.28	0.931
CS11-5_1	-33.9	0.6	0.0	2.5	8.1	28.6	3.595	1.24	**0.092**	1.91	3.541	2.27	0.278	1.24	**0.544**
CS11-5_2	36.7	5.9	0.5	25.9	84.5	300.9	3.602	1.83	**0.105**	0.50	4.008	1.90	0.278	1.83	0.965
CS11-5_3	-243.7	3.4	0.3	16.2	48.5	188.3	3.936	1.16	**0.092**	0.50	3.220	1.26	0.254	1.16	0.918
CS11-5_4	-299.0	7.6	0.7	27.9	109.1	323.8	3.008	1.45	**0.112**	0.50	5.118	1.53	0.332	1.45	0.945
CS11-5_5	-266.8	10.6	1.1	38.3	152.8	444.8	2.956	0.99	**0.119**	0.50	5.570	1.11	0.338	0.99	0.892
CS11-5_6	219.8	4.5	0.4	20.2	64.6	234.1	3.683	1.12	**0.093**	0.50	3.499	1.23	0.272	1.12	0.914
CS11-5_7	30.6	10.3	1.1	31.2	149.2	362.0	2.465	1.52	**0.130**	0.50	7.266	1.60	0.406	1.52	0.950
CS11-5_8	85.0	3.1	0.2	19.8	45.0	229.4	5.176	1.15	**0.078**	0.57	2.082	1.29	0.193	1.15	0.895
CS11-5_11	-264.2	6.5	1.2	14.0	93.5	162.7	1.751	1.07	**0.226**	0.50	17.810	1.18	0.571	1.07	0.906
CS11-5_12	-152.7	7.7	0.7	30.3	111.1	352.2	3.184	1.35	**0.106**	0.50	4.577	1.44	0.314	1.35	0.938
CS11-5_13	-105.7	6.8	0.6	30.7	97.9	356.0	3.689	1.48	**0.104**	0.50	3.875	1.57	0.271	1.48	0.948
CS11-5_14	-437.8	3.2	0.5	7.3	46.0	84.6	1.854	0.93	**0.198**	0.50	14.742	1.06	0.540	0.93	0.882
CS11-5_15	-408.4	3.3	0.2	20.0	47.0	232.3	5.002	1.39	**0.080**	0.50	2.209	1.48	0.200	1.39	0.941
CS11-5_16	-154.7	3.1	0.3	12.0	44.9	139.1	3.175	0.97	**0.107**	0.50	4.653	1.09	0.315	0.97	0.889
CS11-5_17	-63.2	4.0	0.3	18.4	57.1	213.5	3.796	1.19	**0.093**	0.50	3.384	1.29	0.263	1.19	0.922
CS11-5_18	-204.8	2.1	0.1	13.3	30.6	154.8	5.138	0.99	**0.078**	0.71	2.082	1.22	0.195	0.99	0.814
CS11-5_20	-217.3	4.5	0.3	30.9	64.5	359.2	5.625	1.74	**0.082**	0.50	2.010	1.81	0.178	1.74	0.961
CS11-5_21	-115.9	3.6	0.3	15.1	51.6	175.5	3.448	1.19	**0.099**	0.50	3.962	1.29	0.290	1.19	0.921

CS11-5_22	-92.4	1.6	0.1	7.4	23.1	86.2	3.782	1.16	**0.095**	0.84	3.446	1.43	0.264	1.16	0.812
CS11-5_23	42.3	8.2	1.0	29.9	117.8	347.1	2.976	2.17	**0.152**	0.50	7.041	2.22	0.336	2.17	0.974
CS11-5_24	309.1	4.9	0.4	18.5	70.5	214.3	3.085	1.17	**0.109**	0.50	4.882	1.27	0.324	1.17	0.919
CS11-5_26	143.1	0.4	0.0	2.5	5.9	29.5	5.097	1.11	**0.078**	2.98	2.116	3.18	0.196	1.11	**0.348**
CS11-5_27	-74.9	13.2	1.2	50.2	189.8	582.5	3.114	1.15	**0.110**	0.50	4.862	1.26	0.321	1.15	0.917
CS11-5_29	280.1	3.0	0.2	13.6	42.8	158.1	3.748	0.96	**0.094**	0.52	3.466	1.09	0.267	0.96	0.881
CS11-5_33	218.8	5.3	0.5	18.2	76.3	211.0	2.806	1.05	**0.121**	0.50	5.926	1.16	0.356	1.05	0.903
CS11-5_34	-11.9	0.6	0.1	2.7	8.8	31.7	3.687	1.25	**0.098**	1.76	3.660	2.16	0.271	1.25	**0.581**
CS11-5_35	23.7	1.6	0.1	8.2	23.5	95.3	4.021	1.35	**0.091**	1.11	3.125	1.74	0.249	1.35	0.772
CS11-5_36	-241.7	2.7	0.2	12.8	38.6	148.5	3.908	0.89	**0.093**	0.51	3.278	1.03	0.256	0.89	0.866
CS11-5_37	49.7	5.8	0.4	30.6	83.6	355.1	4.313	1.15	**0.085**	0.50	2.726	1.25	0.232	1.15	0.917
CS11-5_38	37.4	2.8	0.2	16.0	40.8	185.8	4.588	1.06	**0.093**	0.53	2.787	1.19	0.218	1.06	0.896
CS11-5_39	-88.1	1.7	0.1	9.4	24.1	109.4	4.567	0.92	**0.083**	0.89	2.508	1.28	0.219	0.92	**0.722**
CS11-5_40	31.6	5.2	0.5	19.4	75.4	225.5	3.033	1.24	**0.110**	0.50	5.001	1.34	0.330	1.24	0.928
CS11-5_41	-88.4	4.3	0.4	17.0	61.6	197.0	3.255	1.07	**0.107**	0.50	4.550	1.18	0.307	1.07	0.906
CS11-5_42	55.0	0.8	0.1	5.7	11.5	66.1	5.801	1.26	**0.074**	1.72	1.770	2.13	0.172	1.26	**0.591**
CS11-5_43	-207.2	3.4	0.3	13.3	48.5	153.9	3.216	1.38	**0.106**	0.50	4.546	1.47	0.311	1.38	0.941
CS11-5_45	113.7	3.4	0.3	13.0	48.7	151.1	3.187	1.21	**0.112**	0.50	4.827	1.31	0.314	1.21	0.924
CS11-5_46	-74.1	1.8	0.1	8.1	25.5	93.7	3.726	2.01	**0.096**	0.77	3.561	2.16	0.268	2.01	0.934
CS11-5_47	223.3	2.7	0.3	9.0	38.3	105.0	2.787	1.00	**0.122**	0.50	6.049	1.12	0.359	1.00	0.894
CS11-5_48	2.6	2.5	0.2	14.8	35.8	171.9	4.932	1.19	**0.091**	0.58	2.544	1.33	0.203	1.19	0.899
CS11-5_50	371.1	5.9	0.5	22.7	85.3	264.0	3.144	0.89	**0.110**	0.21	4.829	0.92	0.318	0.89	0.974
CS11-5_52	47.5	10.2	1.6	23.7	146.3	275.6	1.912	0.96	**0.187**	0.14	13.488	0.97	0.523	0.96	0.990
CS11-5_54	314.7	1.1	0.1	5.6	15.7	64.9	4.189	0.91	**0.090**	1.14	2.975	1.46	0.239	0.91	**0.623**
CS11-5_55	-46.7	2.6	0.2	14.4	37.0	167.0	4.570	1.85	**0.084**	0.56	2.524	1.94	0.219	1.85	0.957
CS11-5_56	218.6	1.8	0.1	9.1	25.6	105.9	4.248	1.09	**0.093**	0.78	3.030	1.34	0.235	1.09	0.813
CS11-5_57	-19.7	1.4	0.1	8.4	19.7	97.6	4.995	0.97	**0.080**	1.06	2.208	1.44	0.200	0.97	**0.673**
CS11-5_58	-151.8	6.8	0.6	28.3	98.7	328.7	3.347	1.34	**0.106**	0.23	4.357	1.36	0.299	1.34	0.985
CS11-5_59	-155.6	3.9	0.4	15.0	56.6	174.0	3.117	1.48	**0.110**	0.37	4.857	1.53	0.321	1.48	0.970
CS11-9_1	264.7	0.4	0.0	2.5	4.7	25.1	5.476	1.45	**0.075**	3.42	1.881	3.71	0.183	1.45	**0.390**
CS11-9_2	300.3	1.1	0.1	7.6	14.0	76.2	5.536	1.39	**0.074**	1.42	1.851	1.99	0.181	1.39	**0.701**
CS11-9_3	166.6	3.4	0.2	21.6	42.6	218.0	5.207	1.32	**0.076**	0.48	2.017	1.41	0.192	1.32	0.941
CS11-9_4	3.2	1.4	0.1	9.3	17.0	93.4	5.598	1.24	**0.074**	1.13	1.824	1.68	0.179	1.24	**0.740**
CS11-9_5	129.7	0.4	0.0	3.5	4.8	35.6	7.486	1.49	**0.073**	3.33	1.341	3.65	0.134	1.49	**0.409**

CS11-9_6	125.0	0.4	0.0	2.8	5.2	28.4	5.531	1.45	**0.075**	2.97	1.864	3.31	0.181	1.45	**0.439**
CS11-9_7	103.9	0.2	0.0	1.1	**2.0**	11.1	5.625	1.89	**0.075**	6.97	1.843	7.22	0.178	1.89	**0.262**
CS11-9_8	212.8	1.5	0.1	10.3	18.9	103.8	5.568	1.49	**0.074**	0.99	1.843	1.79	0.180	1.49	0.833
CS11-9_9	298.7	0.3	0.0	2.1	4.2	20.9	5.054	1.53	**0.079**	3.60	2.164	3.91	0.198	1.53	**0.392**
CS11-9_10	68.4	0.6	0.0	4.3	8.0	42.9	5.491	1.39	**0.074**	2.20	1.868	2.61	0.182	1.39	**0.534**
CS11-9_11	-92.8	0.2	0.0	1.5	**2.8**	15.3	5.547	1.67	**0.076**	5.21	1.886	5.47	0.180	1.67	**0.305**
CS11-9_12	-365.4	0.4	0.0	2.6	4.8	26.1	5.488	1.59	**0.074**	3.22	1.860	3.59	0.182	1.59	**0.441**
CS11-9_13	-286.5	1.2	0.1	8.3	15.4	83.4	5.529	1.37	**0.074**	1.29	1.848	1.88	0.181	1.37	**0.726**
CS11-9_13	-286.5	1.2	0.1	8.3	15.4	83.4	5.529	1.37	**0.074**	1.29	1.848	1.88	0.181	1.37	**0.726**
CS11-9_14	-276.3	0.3	0.0	1.8	**3.5**	18.3	5.321	1.75	**0.074**	4.37	1.906	4.71	0.188	1.75	**0.371**
CS11-9_15	-242.4	0.5	0.0	3.4	6.3	34.1	5.527	1.31	**0.075**	2.57	1.869	2.89	0.181	1.31	**0.454**
CS11-9_16	-147.8	1.5	0.1	10.0	19.0	100.7	5.397	1.24	**0.075**	0.98	1.926	1.58	0.185	1.24	0.785
CS11-9_17	43.1	0.4	0.0	2.3	4.4	23.7	5.472	1.42	**0.075**	3.48	1.893	3.76	0.183	1.42	**0.377**
CS11-9_18	-23.5	0.6	0.0	3.8	7.2	38.8	5.479	1.24	**0.075**	2.35	1.880	2.66	0.183	1.24	**0.466**
CS11-9_19	172.8	0.6	0.0	3.7	7.0	37.3	5.382	1.25	**0.076**	2.25	1.945	2.57	0.186	1.25	**0.485**
CS11-9_20	124.7	2.2	0.1	13.4	27.0	135.8	5.119	1.48	**0.077**	0.68	2.081	1.63	0.195	1.48	0.909
CS11-9_21	301.8	0.5	0.0	3.3	6.3	33.5	5.407	1.76	**0.074**	2.64	1.896	3.18	0.185	1.76	**0.555**
CS11-9_22	76.0	0.6	0.0	3.9	7.5	39.9	5.464	1.39	**0.075**	2.24	1.891	2.64	0.183	1.39	**0.527**
CS11-9_23	354.2	0.3	0.0	2.0	**3.8**	20.4	5.397	1.51	**0.075**	4.01	1.917	4.28	0.185	1.51	**0.351**
CS11-9_24	354.6	1.8	0.1	11.9	22.6	120.2	5.409	2.19	**0.075**	0.92	1.914	2.38	0.185	2.19	0.923
CS11-9_25	486.6	0.5	0.0	3.2	6.1	32.1	5.422	1.36	**0.074**	2.64	1.892	2.97	0.184	1.36	**0.457**
CS11-9_26	318.5	0.2	0.0	1.3	**2.5**	13.4	5.444	1.81	**0.073**	5.80	1.858	6.08	0.184	1.81	**0.298**
CS11-9_27	452.9	1.0	0.1	6.6	12.7	66.4	5.327	1.35	**0.075**	1.48	1.939	2.01	0.188	1.35	**0.674**
CS11-9_28	100.5	0.2	0.0	1.3	**2.4**	12.9	5.423	1.69	**0.073**	5.99	1.868	6.23	0.184	1.69	**0.271**
CS11-9_29	318.9	1.2	0.1	7.5	14.4	75.7	5.340	1.35	**0.075**	1.28	1.936	1.87	0.187	1.35	**0.726**
CS11-9_30	296.8	0.2	0.0	1.2	**2.3**	12.2	5.497	1.82	**0.076**	6.15	1.914	6.42	0.182	1.82	**0.284**
CS11-9_31	-207.8	0.5	0.0	3.2	6.0	32.2	5.421	1.48	**0.075**	2.64	1.896	3.02	0.184	1.48	**0.488**
CS11-9_32	-230.2	0.5	0.0	3.4	6.4	34.3	5.395	1.30	**0.075**	2.61	1.915	2.92	0.185	1.30	**0.446**
CS11-9_33	-59.0	1.2	0.1	8.1	15.1	81.5	5.463	1.34	**0.078**	1.18	1.965	1.78	0.183	1.34	0.750
CS11-9_34	-109.8	0.7	0.0	4.9	9.0	49.9	5.633	1.43	**0.076**	1.80	1.860	2.30	0.178	1.43	**0.621**
CS11-9_35	-59.8	0.4	0.0	2.5	4.5	25.1	5.642	1.60	**0.074**	3.46	1.810	3.82	0.177	1.60	**0.420**
CS11-9_36	-133.5	0.3	0.0	2.1	**3.8**	20.7	5.453	1.28	**0.076**	3.86	1.930	4.06	0.183	1.28	**0.315**

CS11-9_37	-41.1	0.6	0.0	4.1	7.4	41.0	5.569	1.43	**0.075**	2.22	1.866	2.64	0.180	1.43	**0.540**
CS11-9_38	-207.6	0.6	0.0	4.2	8.0	42.8	5.466	1.62	**0.075**	2.04	1.902	2.60	0.183	1.62	**0.622**
CS11-9_39	-181.8	0.6	0.0	4.1	7.6	41.2	5.515	1.59	**0.076**	2.28	1.903	2.78	0.181	1.59	**0.572**
CS11-9_40	-140.5	1.8	0.1	11.7	21.8	117.8	5.491	1.36	**0.075**	0.90	1.882	1.64	0.182	1.36	0.833
CS11-9_41	112.5	1.7	0.1	11.4	21.1	115.0	5.581	1.46	**0.075**	0.95	1.857	1.74	0.179	1.46	0.837
CS11-9_42	302.8	0.2	0.0	1.3	**2.5**	13.6	5.512	1.52	**0.076**	5.71	1.905	5.91	0.181	1.52	**0.257**
CS11-9_43	428.0	0.2	0.0	1.2	**2.1**	12.0	5.716	1.61	**0.075**	6.66	1.814	6.85	0.175	1.61	**0.236**
CS11-9_44	146.7	1.0	0.1	6.8	12.5	68.9	5.592	1.32	**0.075**	1.40	1.839	1.92	0.179	1.32	**0.686**
CS11-9_45	2.3	2.8	0.2	19.5	34.9	196.7	5.729	1.47	**0.075**	0.61	1.798	1.59	0.175	1.47	0.924
CS11-9_46	78.0	0.3	0.0	2.3	**3.8**	22.9	6.081	1.50	**0.073**	4.03	1.664	4.30	0.164	1.50	**0.349**
CS11-9_47	-11.7	1.9	0.1	12.6	23.0	127.5	5.631	1.53	**0.076**	0.85	1.866	1.75	0.178	1.53	0.875
CS11-9_48	234.4	0.2	0.0	1.4	**2.6**	14.6	5.738	1.66	**0.075**	5.56	1.797	5.80	0.174	1.66	**0.285**
CS11-9_49	41.1	0.2	0.0	1.5	**2.8**	15.0	5.432	1.48	**0.077**	5.06	1.944	5.27	0.184	1.48	**0.280**
CS11-9_50	182.7	1.2	0.1	7.8	14.4	79.0	5.574	1.26	**0.076**	1.21	1.878	1.75	0.179	1.26	**0.722**
CS11-9_51	279.7	1.7	0.1	11.3	21.1	114.1	5.492	1.42	**0.075**	0.97	1.895	1.72	0.182	1.42	0.827
CS11-9_52	13.9	0.3	0.0	2.0	**3.8**	20.0	5.313	1.56	**0.078**	3.84	2.035	4.14	0.188	1.56	**0.377**
CS11-9_53	224.4	0.4	0.0	2.2	4.5	22.3	4.994	1.69	**0.080**	3.22	2.203	3.64	0.200	1.69	**0.465**
CS11-9_54	216.3	0.3	0.0	2.3	4.1	22.9	5.704	1.86	**0.076**	3.69	1.836	4.13	0.175	1.86	**0.450**
CS11-9_55	345.4	0.7	0.0	5.1	9.2	51.0	5.635	1.23	**0.076**	1.85	1.852	2.23	0.177	1.23	**0.554**
CS11-9_56	32.9	0.1	0.0	0.4	**0.8**	4.0	5.348	2.78	**0.076**	16.29	1.948	16.53	0.187	2.78	**0.168**
CS11-9_57	187.0	0.7	0.0	4.7	8.6	47.6	5.681	1.86	**0.076**	1.93	1.842	2.68	0.176	1.86	**0.692**
CS11-9_58	242.2	2.0	0.2	10.4	25.2	104.6	4.204	1.39	**0.091**	0.78	2.969	1.59	0.238	1.39	0.874
CS11-9_59	64.3	0.3	0.0	2.3	4.2	23.3	5.575	1.43	**0.078**	3.46	1.937	3.74	0.179	1.43	**0.381**
CS11-9_60	279.6	0.4	0.0	2.7	4.9	27.0	5.608	1.32	**0.075**	3.17	1.837	3.43	0.178	1.32	**0.384**
CS11-9_61	-6.2	0.6	0.0	3.9	7.5	39.9	5.376	1.72	**0.086**	3.26	2.211	3.68	0.186	1.72	**0.467**
CS11-9_62	131.0	1.2	0.1	7.9	14.9	80.0	5.441	1.26	**0.074**	1.25	1.885	1.77	0.184	1.26	**0.710**
CS11-9_63	19.9	1.6	0.1	9.1	19.5	91.5	4.773	1.28	**0.081**	0.87	2.350	1.54	0.210	1.28	0.825
CS11-9_64	76.4	0.3	0.0	1.9	**3.6**	19.5	5.482	1.62	**0.078**	4.06	1.959	4.37	0.182	1.62	**0.371**
CS11-9_65	-171.1	0.8	0.1	6.0	10.2	60.5	6.019	1.25	**0.077**	2.05	1.759	2.40	0.166	1.25	**0.518**
CS11-9_66	-10.2	0.9	0.1	5.8	10.8	59.0	5.527	1.24	**0.075**	1.58	1.877	2.01	0.181	1.24	**0.618**
CS11-9_67	-97.3	0.2	0.0	1.0	**1.9**	10.2	5.475	1.82	**0.076**	7.15	1.924	7.37	0.183	1.82	**0.246**
CS11-9_68	-59.6	0.7	0.0	4.6	8.4	46.3	5.614	1.32	**0.075**	1.99	1.849	2.39	0.178	1.32	**0.553**

CS11-9_69	136.3	0.5	0.0	3.2	6.5	32.2	5.071	1.34	**0.079**	2.41	2.149	2.75	0.197	1.34	**0.487**
CS11-9_70	-73.8	0.1	0.0	1.0	**1.8**	9.7	5.549	1.75	**0.078**	7.39	1.938	7.59	0.180	1.75	**0.230**
CS11-9_71	62.4	0.7	0.0	4.3	8.2	43.1	5.378	1.61	**0.077**	2.07	1.977	2.62	0.186	1.61	**0.614**
CS11-9_72	129.6	0.1	0.0	0.9	**1.7**	9.3	5.571	1.40	**0.075**	7.98	1.857	8.10	0.180	1.40	**0.172**
CS11-9_73	174.9	0.8	0.1	5.4	10.0	54.7	5.502	1.30	**0.076**	1.80	1.892	2.22	0.182	1.30	**0.586**
CS11-9_74	167.9	1.0	0.1	6.7	12.2	67.6	5.576	1.56	**0.075**	1.47	1.850	2.14	0.179	1.56	**0.728**
CS11-9_75	175.2	2.1	0.2	9.7	25.7	98.3	3.891	1.45	**0.094**	0.61	3.319	1.57	0.257	1.45	0.921
CS11-9_76	-31.2	0.9	0.1	6.0	11.1	61.0	5.615	1.29	**0.075**	1.65	1.851	2.09	0.178	1.29	**0.617**
CS11-9_77	73.2	0.6	0.0	3.8	6.9	38.2	5.615	1.34	**0.075**	2.29	1.841	2.66	0.178	1.34	**0.506**
CS11-9_78	141.5	0.8	0.1	5.7	10.4	57.6	5.613	1.46	**0.075**	1.63	1.839	2.19	0.178	1.46	**0.666**
CS11-9_79	38.7	0.7	0.0	4.6	8.5	46.5	5.559	1.49	**0.076**	1.96	1.882	2.46	0.180	1.49	**0.604**
CS11-9_80	-90.3	0.2	0.0	1.5	**3.0**	14.9	5.001	1.41	**0.081**	4.63	2.225	4.84	0.200	1.41	**0.291**
CS11-9_81	102.2	0.4	0.0	2.9	5.3	29.1	5.630	1.37	**0.076**	3.14	1.858	3.42	0.178	1.37	**0.401**
CS11-9_82	20.6	1.2	0.1	7.8	14.7	78.6	5.461	1.51	**0.075**	1.30	1.904	2.00	0.183	1.51	0.757
CS11-9_83	313.4	0.2	0.0	1.3	**2.4**	12.9	5.634	1.34	**0.075**	6.00	1.826	6.15	0.178	1.34	**0.219**
CS11-9_84	102.7	0.1	0.0	0.7	**1.4**	7.4	5.385	1.84	**0.075**	9.57	1.919	9.75	0.186	1.84	**0.189**
CS11-9_85	5.3	0.3	0.0	1.9	**3.7**	19.5	5.354	1.38	**0.076**	4.11	1.957	4.33	0.187	1.38	**0.319**
CS11-9_86	258.6	0.4	0.0	2.9	5.4	29.2	5.540	1.49	**0.075**	2.89	1.878	3.25	0.181	1.49	**0.457**
CS11-9_87	216.9	0.9	0.1	6.2	11.5	62.7	5.553	1.37	**0.075**	1.77	1.855	2.24	0.180	1.37	**0.611**
CS11-9_88	443.1	0.3	0.0	1.8	**3.2**	17.8	5.591	1.37	**0.077**	4.49	1.887	4.69	0.179	1.37	**0.292**
CS11-9_89	464.7	1.3	0.1	9.0	16.5	91.3	5.593	1.40	**0.075**	1.15	1.854	1.81	0.179	1.40	0.772
CS11-9_90	219.1	0.8	0.1	5.3	9.7	53.4	5.605	1.37	**0.076**	1.73	1.864	2.21	0.178	1.37	**0.621**
CS11-9_91	-5.9	0.5	0.0	3.5	6.4	35.1	5.562	1.32	**0.074**	2.49	1.839	2.82	0.180	1.32	**0.467**
CS11-9_92	220.5	0.1	0.0	1.0	**1.8**	9.8	5.569	1.43	**0.073**	7.74	1.817	7.87	0.180	1.43	**0.181**
CS11-9_93	191.6	0.2	0.0	1.7	**3.1**	17.4	5.747	1.47	**0.074**	4.75	1.784	4.97	0.174	1.47	**0.296**
CS11-9_94	160.5	0.3	0.0	2.1	**3.9**	20.9	5.478	1.45	**0.076**	3.96	1.908	4.22	0.183	1.45	**0.344**
CS11-9_95	359.1	0.5	0.0	3.4	6.4	34.3	5.483	1.30	**0.075**	2.53	1.880	2.84	0.182	1.30	**0.456**
CS11-9_96	127.2	0.5	0.0	3.6	6.6	36.2	5.515	1.24	**0.074**	2.56	1.861	2.84	0.181	1.24	**0.438**
CS11-9_97	81.0	0.7	0.0	4.6	8.6	46.5	5.504	1.31	**0.074**	1.94	1.852	2.34	0.182	1.31	**0.559**
CS11-9_98	-114.1	0.5	0.0	3.1	5.9	31.7	5.429	1.33	**0.076**	2.78	1.922	3.08	0.184	1.33	**0.433**
CS11-9_99	163.8	0.3	0.0	2.3	4.3	23.0	5.458	1.55	**0.075**	3.51	1.899	3.84	0.183	1.55	**0.403**
CS11-9_100	31.8	0.5	0.0	3.2	6.3	32.4	5.249	1.62	**0.077**	2.55	2.012	3.02	0.191	1.62	**0.538**

CS11-9_101	-167.5	0.2	0.0	1.2	**2.2**	12.3	5.444	1.48	**0.075**	6.28	1.898	6.45	0.184	1.48	**0.229**
CS11-9_102	66.4	0.4	0.0	2.7	5.0	27.5	5.452	1.51	**0.076**	3.00	1.916	3.36	0.183	1.51	**0.450**
CS11-9_103	134.8	1.3	0.1	8.9	16.1	90.3	5.733	1.31	**0.075**	1.14	1.804	1.74	0.174	1.31	0.754
CS11-9_104	3.1	0.9	0.1	5.9	10.7	59.6	5.680	1.43	**0.076**	1.70	1.835	2.22	0.176	1.43	**0.645**
CS11-9_105	-25.2	1.0	0.1	6.7	12.0	68.1	5.784	1.55	**0.073**	1.55	1.750	2.19	0.173	1.55	**0.705**
CS11-9_106	89.5	0.1	0.0	0.9	**1.5**	8.6	5.981	1.78	**0.073**	9.34	1.678	9.50	0.167	1.78	**0.187**
CS11-9_107	250.9	0.5	0.0	3.2	5.7	31.8	5.655	1.27	**0.076**	2.70	1.851	2.98	0.177	1.27	**0.425**
CS11-9_108	262.7	0.8	0.1	5.2	9.5	52.1	5.585	2.78	**0.107**	14.96	2.649	15.22	0.179	2.78	**0.183**
CS11-9_109	369.7	0.4	0.0	2.9	5.3	29.3	5.606	1.40	**0.075**	2.92	1.843	3.24	0.178	1.40	**0.432**
CS11-9_110	514.4	0.3	0.0	2.2	**3.7**	21.8	5.972	1.61	**0.074**	4.26	1.715	4.55	0.167	1.61	**0.353**
CS11-9_111	22.8	0.3	0.0	2.2	4.1	22.2	5.521	1.59	**0.076**	3.70	1.889	4.03	0.181	1.59	**0.394**
CS11-9_112	104.1	2.9	0.2	17.8	35.6	179.7	5.142	1.42	**0.079**	0.56	2.118	1.53	0.194	1.42	0.931
CS11-9_113	-40.6	0.5	0.0	3.4	6.3	33.9	5.481	1.45	**0.077**	2.48	1.935	2.87	0.182	1.45	**0.505**
CS11-9_114	64.6	0.5	0.0	3.5	6.3	34.9	5.638	1.43	**0.075**	2.77	1.832	3.12	0.177	1.43	**0.458**
CS11-9_115	85.8	0.3	0.0	2.2	4.1	22.5	5.530	1.70	**0.077**	3.61	1.909	3.99	0.181	1.70	**0.427**
CS11-9_116	26.9	0.1	0.0	0.9	**1.7**	9.3	5.724	2.23	**0.075**	8.04	1.799	8.35	0.175	2.23	**0.268**
CS11-9_117	123.3	0.5	0.0	3.6	6.6	35.9	5.544	1.23	**0.077**	2.42	1.917	2.71	0.180	1.23	**0.454**
CS11-9_118	53.3	0.3	0.0	2.2	**4.0**	21.8	5.570	1.71	**0.074**	3.92	1.842	4.28	0.180	1.71	**0.400**
CS11-9_119	111.4	0.3	0.0	2.2	**3.9**	21.9	5.652	1.50	**0.077**	3.70	1.878	4.00	0.177	1.50	**0.375**
CS11-9_120	-94.4	0.8	0.0	5.2	9.3	52.7	5.741	1.38	**0.075**	1.78	1.809	2.25	0.174	1.38	**0.612**
CS11-13_1	122.1	2.6	0.2	11.7	32.8	121.6	3.768	1.98	**0.098**	0.51	3.597	2.04	0.265	1.98	0.968
CS11-13_2	131.4	4.5	0.3	32.5	57.4	338.2	5.943	2.03	**0.074**	0.44	1.724	2.07	0.168	2.03	0.978
CS11-13_3	121.3	1.7	0.1	7.9	21.1	81.8	3.934	1.95	**0.097**	0.79	3.408	2.10	0.254	1.95	0.928
CS11-13_4	211.6	2.0	0.1	11.7	24.9	122.1	4.981	2.00	**0.087**	0.77	2.404	2.14	0.201	2.00	0.933
CS11-13_6	206.5	3.1	0.2	21.2	39.1	219.9	5.714	2.19	**0.074**	0.62	1.792	2.28	0.175	2.19	0.962
CS11-13_7	341.0	0.3	0.0	2.2	**3.9**	22.4	5.840	1.98	**0.075**	4.03	1.766	4.49	0.171	1.98	**0.441**
CS11-13_9	-104.2	2.5	0.2	16.6	32.3	172.5	5.431	2.09	**0.075**	0.72	1.909	2.21	0.184	2.09	0.946
CS11-13_10	-57.8	1.7	0.1	10.5	21.6	109.3	5.152	2.01	**0.079**	0.83	2.106	2.17	0.194	2.01	0.924
CS11-13_11	-22.3	1.4	0.1	6.2	18.1	64.7	3.631	2.05	**0.099**	0.81	3.744	2.21	0.275	2.05	0.930
CS11-13_12	49.2	1.1	0.1	4.9	13.6	50.9	3.796	2.05	**0.094**	1.11	3.424	2.33	0.263	2.05	0.879
CS11-13_13	-188.1	8.2	0.6	44.6	104.4	463.2	4.508	2.06	**0.090**	0.32	2.746	2.09	0.222	2.06	0.988
CS11-13_15	-11.2	0.4	0.0	2.7	4.7	27.6	5.967	2.19	**0.073**	3.46	1.683	4.10	0.168	2.19	**0.535**

CS11-13_14	202.2	5.2	0.4	21.5	66.6	223.4	3.405	2.13	**0.101**	0.27	4.109	2.15	0.294	2.13	0.992
CS11-13_19	-106.1	9.9	0.8	42.1	126.4	437.6	3.508	2.45	**0.102**	0.19	3.997	2.46	0.285	2.45	0.997
CS11-13_18	215.3	2.3	0.2	10.1	28.7	104.7	3.749	1.99	**0.101**	0.55	3.703	2.06	0.267	1.99	0.964
CS11-13_16	12.7	1.6	0.1	11.6	20.8	120.4	5.872	2.10	**0.075**	0.95	1.754	2.30	0.170	2.10	0.910
CS11-13_17	91.0	8.2	0.7	34.1	104.2	354.1	3.449	2.09	**0.103**	0.24	4.109	2.11	0.290	2.09	0.994
CS11-13_22	-60.1	10.8	1.0	42.9	137.8	445.8	3.285	1.96	**0.115**	0.13	4.818	1.96	0.304	1.96	0.998
CS11-13_20	-52.3	9.5	0.9	32.4	121.2	336.7	2.819	1.98	**0.114**	0.18	5.572	1.99	0.355	1.98	0.996
CS11-13_21	535.6	0.3	0.0	1.8	4.3	18.8	4.447	2.61	**0.085**	3.28	2.633	4.19	0.225	2.61	**0.623**
CS11-13_23	338.7	0.4	0.0	2.2	4.6	22.9	5.045	2.23	**0.082**	3.24	2.247	3.93	0.198	2.23	**0.567**
CS11-13_24	266.6	2.6	0.2	12.0	33.3	124.7	3.800	2.17	**0.099**	0.49	3.596	2.23	0.263	2.17	0.975
CS11-13_26	178.1	2.9	0.2	21.2	36.5	219.9	6.107	2.46	**0.073**	0.60	1.638	2.53	0.164	2.46	0.971
CS11-13_28	108.3	8.8	0.8	38.0	112.1	395.1	3.568	2.27	**0.102**	0.24	3.924	2.28	0.280	2.27	0.994
CS11-13_29	17.0	3.3	0.3	15.6	41.5	162.5	3.975	2.10	**0.091**	0.47	3.169	2.15	0.252	2.10	0.976
CS11-13_30	217.4	0.7	0.0	4.6	9.1	47.8	5.333	1.98	**0.076**	1.86	1.973	2.72	0.187	1.98	**0.729**
CS11-13_31	-143.5	3.1	0.2	16.6	39.0	172.2	4.481	2.01	**0.086**	0.52	2.656	2.07	0.223	2.01	0.968
CS11-13_32	-135.4	5.4	0.5	21.3	69.0	221.9	3.257	2.02	**0.106**	0.29	4.500	2.04	0.307	2.02	0.990
CS11-13_33	53.0	0.8	0.1	3.9	9.9	40.6	4.178	2.00	**0.089**	1.59	2.937	2.56	0.239	2.00	0.783
CS11-13_35	143.2	2.5	0.2	16.5	32.0	171.2	5.427	1.93	**0.076**	0.69	1.938	2.05	0.184	1.93	0.942
CS11-13_36	69.7	0.7	0.0	3.9	8.4	41.0	4.954	2.08	**0.080**	1.91	2.235	2.82	0.202	2.08	**0.735**
CS11-13_37	56.5	0.3	0.0	2.2	**3.8**	23.1	6.135	2.06	**0.072**	4.19	1.608	4.67	0.163	2.06	**0.441**
CS11-13_38	19.4	1.1	0.1	4.7	14.1	48.7	3.513	2.03	**0.102**	1.02	3.997	2.27	0.285	2.03	0.894
CS11-13_39	206.0	2.4	0.2	10.4	30.6	108.2	3.594	2.06	**0.100**	0.52	3.828	2.13	0.278	2.06	0.969
CS11-13_40	-31.1	4.4	0.4	21.5	55.9	223.5	4.054	1.96	**0.095**	0.41	3.244	2.00	0.247	1.96	0.978
CS11-13_41	-2.3	4.2	0.3	23.8	53.2	247.5	4.742	2.08	**0.082**	0.46	2.388	2.13	0.211	2.08	0.977
CS11-13_42	-17.7	1.2	0.1	9.2	15.8	95.9	6.176	1.99	**0.072**	1.21	1.599	2.33	0.162	1.99	0.855
CS11-13_43	75.7	0.8	0.1	4.3	10.3	44.7	4.430	1.89	**0.086**	1.71	2.672	2.55	0.226	1.89	**0.742**
CS11-13_44	0.8	3.8	0.3	17.7	48.8	184.3	3.837	2.06	**0.093**	0.39	3.330	2.09	0.261	2.06	0.982
CS11-13_45	205.3	5.3	0.5	22.0	67.6	228.9	3.439	2.05	**0.101**	0.32	4.064	2.07	0.291	2.05	0.988
CS11-13_46	-49.6	5.2	0.4	21.8	66.8	226.8	3.446	2.02	**0.102**	0.34	4.063	2.05	0.290	2.02	0.986
CS11-13_47	239.4	1.5	0.1	6.3	19.7	65.5	3.376	2.06	**0.100**	0.81	4.080	2.21	0.296	2.06	0.930
CS11-13_48	60.2	1.1	0.1	5.1	13.9	52.5	3.822	2.24	**0.099**	1.07	3.564	2.48	0.262	2.24	0.903
CS11-13_49	-80.9	2.1	0.2	11.6	27.0	121.0	4.547	2.34	**0.085**	0.71	2.578	2.45	0.220	2.34	0.957

CS11-13_50	-7.0	0.7	0.0	5.9	8.9	60.8	6.898	2.46	**0.074**	2.06	1.481	3.20	0.145	2.46	0.766
CS11-13_51	-36.7	0.5	0.0	2.3	6.8	24.2	3.605	2.41	**0.101**	1.87	3.867	3.05	0.277	2.41	0.789
CS11-13_52	8.8	0.2	0.0	1.4	**2.8**	15.1	5.547	2.36	**0.076**	5.22	1.894	5.73	0.180	2.36	**0.413**
CS11-13_54	87.3	1.1	0.1	6.1	13.8	63.7	4.683	2.29	**0.085**	1.28	2.488	2.62	0.214	2.29	0.872
CS11-13_55	-32.0	1.5	0.1	10.9	19.6	113.6	5.867	2.07	**0.074**	1.00	1.744	2.30	0.170	2.07	0.900
CS11-13_56	-212.8	1.4	0.1	6.3	17.9	65.8	3.734	1.97	**0.095**	0.95	3.523	2.18	0.268	1.97	0.901
CS11-13_57	36.9	2.3	0.1	15.0	29.6	156.3	5.369	1.98	**0.077**	0.68	1.971	2.10	0.186	1.98	0.946
CS11-13_59	242.1	1.2	0.1	4.9	15.2	51.0	3.396	1.99	**0.104**	0.92	4.203	2.20	0.294	1.99	0.908
CS11-13_60	282.2	1.4	0.1	5.6	17.4	58.3	3.445	2.05	**0.101**	0.85	4.039	2.22	0.290	2.05	0.924
CS11-13_62	44.5	2.3	0.2	9.4	29.3	97.7	3.379	1.99	**0.102**	0.55	4.159	2.07	0.296	1.99	0.965
CS11-13_63	-48.1	0.2	0.0	1.4	**3.1**	14.2	4.701	2.37	**0.084**	4.41	2.476	5.01	0.213	2.37	**0.474**
CS11-13_64	60.6	3.0	0.2	14.5	37.7	150.7	4.062	1.98	**0.095**	0.55	3.229	2.06	0.246	1.98	0.964
CS11-13_65	168.7	3.0	0.2	14.7	38.2	152.9	4.028	3.15	**0.097**	0.90	3.328	3.28	0.248	3.15	0.961
CS11-13_66	-136.0	2.7	0.2	14.4	34.8	149.7	4.357	2.28	**0.089**	0.49	2.820	2.34	0.229	2.28	0.978
CS11-13_67	254.4	6.2	0.5	26.6	78.8	276.4	3.558	2.02	**0.102**	0.24	3.944	2.03	0.281	2.02	0.993
CS11-13_68	87.1	0.5	0.0	2.9	7.0	30.0	4.397	1.97	**0.093**	2.13	2.923	2.90	0.227	1.97	**0.679**
CS11-13_69	234.4	1.2	0.1	8.7	15.9	90.3	5.763	2.02	**0.074**	1.14	1.776	2.32	0.174	2.02	0.870
CS11-13_70	-34.0	0.6	0.0	3.6	7.4	37.2	5.111	2.19	**0.081**	2.35	2.194	3.21	0.196	2.19	**0.681**
CS11-13_71	208.4	2.4	0.1	16.3	30.1	169.5	5.712	2.02	**0.075**	0.67	1.815	2.13	0.175	2.02	0.948
CS11-13_72	232.0	3.9	0.4	15.4	50.2	159.7	3.228	2.02	**0.108**	0.41	4.609	2.06	0.310	2.02	0.980
CS11-13_73	-168.5	8.5	1.3	21.2	108.0	220.6	2.074	2.08	**0.182**	0.15	12.069	2.08	0.482	2.08	0.997
CS11-13_74	88.3	2.1	0.1	14.1	26.7	147.0	5.592	2.08	**0.075**	0.75	1.857	2.21	0.179	2.08	0.940
CS11-13_75	-103.2	3.5	0.3	14.8	44.6	154.2	3.508	2.03	**0.102**	0.37	4.009	2.06	0.285	2.03	0.983
CS11-13_77	-64.9	1.6	0.1	8.2	20.2	85.0	4.251	1.90	**0.087**	0.90	2.806	2.10	0.235	1.90	0.903
CS11-13_78	187.2	1.2	0.1	5.2	15.0	54.0	3.657	1.97	**0.100**	1.06	3.757	2.24	0.273	1.97	0.881
CS11-13_79	244.3	0.8	0.0	5.1	9.6	53.3	5.687	1.92	**0.075**	1.85	1.809	2.67	0.176	1.92	**0.721**
CS11-13_80	645.8	2.5	0.2	12.5	31.3	129.9	4.208	2.01	**0.090**	0.56	2.960	2.08	0.238	2.01	0.963
CS11-13_81	94.5	3.2	0.3	13.0	40.9	134.9	3.384	1.99	**0.111**	0.45	4.513	2.04	0.296	1.99	0.976
CS11-13_82	-51.1	2.3	0.2	9.9	29.2	103.1	3.584	2.05	**0.102**	0.53	3.931	2.11	0.279	2.05	0.968
CS11-13_83	92.7	1.9	0.1	10.3	24.1	107.0	4.514	2.02	**0.086**	0.87	2.632	2.20	0.222	2.02	0.919
CS11-13_84	69.8	4.4	0.3	31.6	55.6	328.2	6.026	1.95	**0.073**	0.48	1.679	2.01	0.166	1.95	0.972
CS11-13_85	241.2	0.8	0.1	4.2	9.8	43.2	4.482	2.08	**0.086**	1.68	2.637	2.67	0.223	2.08	0.778

$^{207}Pb/^{206}Pb$	2s abs	$^{206}Pb/^{238}U$	2s abs	$^{207}Pb/^{235}U$	2s abs	6-38/7-6
1988.6	12.3	2041.4	45.4	2015.3	25.5	-3%
1946.2	31.7	2437.0	90.5	2180.0	50.1	-25%
2281.0	12.0	814.6	105.1	1323.6	98.1	64%
2153.0	10.7	2167.2	41.1	2159.9	22.6	-1%
1909.1	34.6	1947.2	67.0	1928.8	46.9	-2%
1926.1	5.6	2005.9	57.7	1966.9	29.3	-4%
1876.8	4.3	1942.6	27.1	1911.0	14.4	-4%
2154.8	12.0	2186.3	24.0	2170.1	16.8	-1%
2137.6	20.9	2115.2	24.7	2126.6	24.2	1%
1897.5	4.3	1858.9	37.2	1877.2	20.0	2%
1997.0	11.5	1968.1	27.9	1982.2	18.1	1%
2619.2	14.4	2589.5	63.0	2606.2	31.7	1%
1920.1	8.4	1840.5	41.0	1878.2	23.1	4%
1987.7	7.3	1715.3	37.5	1841.7	22.1	14%
2142.5	4.4	2134.5	37.5	2138.6	18.9	0%
1839.9	19.6	2186.6	138.9	2013.3	66.7	-19%
2159.5	12.7	2143.6	48.4	2151.7	26.7	1%
1944.9	24.1	2247.3	190.2	2093.2	89.2	-16%
2131.3	24.6	2088.9	38.7	2110.3	31.1	2%
1854.8	4.1	1824.6	36.3	1838.7	19.7	2%
2161.6	24.2	2149.6	78.0	2155.8	44.7	1%
2147.4	12.2	2238.9	42.6	2191.5	23.6	-4%
1979.2	5.7	1860.8	63.1	1917.4	33.7	6%
1943.2	17.8	2396.6	271.3	2160.5	118.0	-23%
1895.6	7.9	1898.2	116.6	1896.9	60.1	0%
2839.8	3.1	2876.4	150.5	2854.9	60.9	-1%
2131.7	16.7	2198.0	65.0	2163.9	35.1	-310%
2142.9	11.9	2156.6	54.9	2149.6	29.1	-60%
2141.0	10.9	2133.2	64.6	2137.2	33.2	40%
2958.9	7.6	2990.3	86.7	2971.5	35.6	-110%
2158.8	19.6	2126.7	60.6	2143.1	35.4	150%
1902.5	6.7	1903.5	43.8	1903.0	23.5	-10%
2137.9	8.3	2135.0	46.2	2136.4	24.0	10%

1903.7	14.9	1896.6	47.0	1900.0	28.1	40%
2149.7	5.7	2094.6	48.2	2122.5	24.5	260%
2663.1	3.5	2585.8	55.3	2629.4	24.5	290%
2776.3	2.3	2788.4	59.9	2781.4	25.1	-40%
2394.0	3.4	2401.3	74.7	2397.4	34.1	-30%
2144.2	7.5	2110.9	59.2	2127.8	29.9	160%
2916.7	3.1	2889.5	64.1	2905.5	26.4	90%
1873.5	3.4	1852.9	49.3	1862.6	26.1	110%
2131.7	12.7	2092.8	48.2	2112.5	26.9	180%
2138.3	13.0	2110.9	52.8	2124.8	28.9	130%
1957.4	5.9	1959.9	46.8	1958.6	24.5	-10%
2136.2	9.8	2118.3	47.3	2127.4	25.1	80%
2378.7	35.7	1418.0	85.7	1850.5	65.7	4040%
2110.7	18.5	2193.0	45.6	2150.8	28.6	-390%
2171.0	42.4	2159.2	54.4	2165.2	49.8	50%
2177.5	20.0	2143.1	50.2	2160.7	31.7	160%
1881.8	4.4	1900.4	46.1	1891.5	24.2	-100%
2715.9	5.9	2728.9	72.0	2721.4	31.1	-50%
1898.4	5.7	1865.0	51.3	1880.8	27.4	180%
2742.0	6.8	2742.7	67.3	2742.3	29.3	0%
1935.4	14.0	1917.6	58.4	1926.2	32.9	90%
2720.7	5.9	2738.5	69.9	2728.2	30.1	-70%
2744.0	5.0	2782.0	69.2	2760.0	29.3	-140%
2128.2	16.9	2167.5	69.7	2147.4	37.4	-180%
1917.0	5.3	1925.8	55.1	1921.6	28.7	-50%
1925.1	4.2	1885.6	71.0	1904.5	37.1	210%
3217.6	4.5	3181.9	91.8	3203.8	35.6	110%
1916.9	7.8	1969.4	50.1	1944.0	26.4	-270%
1881.9	8.8	1876.9	50.8	1879.3	27.7	30%
2149.4	10.8	2152.9	56.5	2151.1	29.4	-20%
2723.6	5.0	2761.0	60.3	2739.5	25.9	-140%
2143.0	14.4	2155.5	51.8	2149.1	28.9	-60%
1879.1	13.0	1957.8	51.6	1919.9	28.9	-420%
2552.6	7.1	2616.8	59.9	2580.7	27.0	-250%

2128.8	18.7	2210.5	56.0	2168.4	32.5	-380%
2467.0	17.7	2592.3	67.7	2522.6	34.9	-510%
1916.9	8.9	1949.0	53.4	1933.5	28.4	-170%
2782.8	5.6	2825.3	67.5	2800.6	28.6	-150%
2718.4	3.3	2691.4	74.1	2706.8	31.7	100%
1906.2	4.3	1916.5	47.8	1911.6	24.9	-50%
2026.6	14.0	2004.4	50.5	2015.3	28.8	110%
2116.5	32.4	2209.3	61.9	2161.5	43.5	-440%
1892.0	5.8	1926.7	49.0	1910.1	25.7	-180%
1850.5	4.7	1890.1	45.9	1871.3	24.2	-210%
2712.7	2.7	2757.0	71.7	2731.5	30.1	-160%
2146.5	7.8	2183.9	58.6	2164.7	29.1	-170%
2139.5	16.5	2174.4	61.6	2156.5	33.8	-160%
2655.8	12.0	1491.9	115.9	2042.4	75.4	4380%
2131.5	8.1	2167.6	61.6	2149.1	30.7	-170%
1969.1	9.8	1997.4	61.0	1983.6	32.0	-140%
1891.6	17.9	1922.8	59.8	1907.9	34.9	-160%
2072.4	15.9	1895.2	47.0	1981.3	29.1	850%
2772.8	8.5	2828.9	83.2	2796.3	35.5	-200%
2162.6	14.5	2228.9	50.1	2194.5	27.8	-310%
1899.0	8.5	1924.9	61.3	1912.4	32.4	-140%
2297.8	5.7	2306.1	80.8	2301.7	37.9	-40%
2735.3	5.7	2737.2	90.2	2736.1	38.4	-10%
2125.8	17.7	2125.7	79.2	2125.8	42.2	0%
2739.9	3.1	2736.6	66.3	2738.5	28.1	10%
1938.0	14.4	1643.4	133.1	1777.1	76.0	1520%
1924.9	23.3	1912.1	66.1	1918.3	40.4	1%
1907.1	20.2	1928.0	66.2	1917.9	38.8	-1%
1900.8	22.0	1906.5	62.0	1903.8	37.9	0%
1901.6	14.7	1907.9	67.5	1904.9	37.3	0%
2157.3	8.6	2196.6	75.2	2176.4	36.8	-2%
2159.6	9.4	2167.6	72.6	2163.5	36.1	0%
2174.5	13.5	2161.0	74.4	2168.0	38.3	1%
2162.2	28.1	2193.5	73.2	2177.4	44.8	-1%

2111.3	29.4	1448.8	96.7	1740.5	66.3	31%
2199.5	18.8	2168.3	80.5	2184.4	43.0	1%
1942.1	13.4	1824.1	78.2	1879.9	43.4	6%
2535.0	6.2	2555.7	85.4	2544.2	37.9	-1%
2143.1	12.0	2209.2	70.9	2175.1	35.6	-3%
2141.3	9.6	2165.5	77.3	2153.1	38.3	-1%
2134.7	12.3	2162.4	73.4	2148.2	37.4	-1%
2153.9	25.2	2156.3	87.6	2155.1	49.0	0%
3175.6	21.7	2381.3	198.4	2835.0	95.3	25%
2753.8	13.6	2373.1	77.0	2584.0	38.9	14%
2698.2	8.1	2694.2	94.5	2696.5	41.0	0%
2717.0	4.3	2712.7	94.4	2715.2	40.1	0%
2133.7	12.2	2125.4	72.2	2129.6	37.1	0%
2136.8	7.1	2125.8	71.6	2131.4	35.5	1%
2380.3	34.5	1759.9	101.4	2062.6	66.4	26%
2122.4	14.9	2123.9	80.1	2123.1	41.6	0%
2131.1	11.2	2115.5	76.7	2123.4	39.0	1%
3256.4	1.6	3091.2	108.0	3192.2	42.2	5%
2128.6	9.4	2117.5	75.4	2123.1	37.9	1%
2126.6	9.1	2153.3	78.3	2139.7	38.7	-1%
2133.8	24.0	2115.5	70.8	2124.8	41.9	1%
1887.8	10.5	1854.1	71.3	1870.0	38.6	2%
2649.0	4.3	2549.4	93.4	2605.3	41.3	4%
2745.4	7.8	2482.8	85.8	2630.0	39.6	10%
2124.1	6.0	2126.9	74.0	2125.5	36.4	0%
2750.3	8.7	2737.6	85.8	2744.9	37.4	0%
2769.3	5.5	2541.8	79.9	2670.4	36.0	8%
2779.7	17.0	2781.5	93.8	2780.5	43.4	0%
1434.6	9.5	1482.2	34.8	1462.7	21.6	-3%
1306.3	10.8	1184.1	67.6	1228.1	44.5	9%
1815.0	9.1	1814.8	43.2	1814.9	24.4	0%
1501.9	12.2	1530.2	34.3	1518.4	22.1	-2%
1387.3	9.6	1326.1	33.9	1349.7	22.2	4%

1743.2	9.2	1760.4	33.2	1752.6	19.7	-1%
2557.5	8.4	2515.6	45.4	2538.8	22.2	2%
1305.2	9.7	1281.3	28.1	1290.2	19.0	2%
1155.2	12.4	1207.2	23.2	1188.7	17.1	-5%
2490.1	8.4	2277.8	37.6	2391.6	20.1	9%
1724.0	12.3	1694.1	35.3	1707.5	22.3	2%
1384.3	31.3	1399.0	25.8	1393.2	28.8	-1%
1283.0	13.4	1282.5	24.6	1282.7	18.2	0%
1143.4	15.0	1166.9	23.5	1158.7	18.3	-2%
1425.7	9.5	1460.3	37.9	1446.3	23.4	-2%
1297.5	11.1	1239.5	41.7	1260.8	27.7	4%
1541.1	82.6	1250.2	37.1	1361.6	68.0	19%
1576.1	18.9	1440.7	37.0	1496.4	27.1	9%
2562.6	8.4	2590.7	66.4	2575.0	30.3	-1%
1330.1	19.6	1230.2	27.7	1267.0	22.9	8%
1557.5	9.4	1572.6	44.1	1566.2	26.2	-1%
1536.8	10.0	1513.1	41.4	1523.0	25.4	2%
1538.0	9.4	1529.1	41.5	1532.9	25.1	1%
1770.1	9.1	1702.9	57.1	1733.2	32.4	4%
1617.4	19.2	1603.6	37.7	1609.6	26.8	1%
1395.5	11.8	1408.7	25.3	1403.5	17.7	-1%
1652.8	9.3	1673.0	40.3	1664.1	23.6	-1%
1043.6	16.5	1062.4	19.2	1056.3	16.6	-2%
1709.8	9.2	1699.1	38.2	1703.9	22.5	1%
1327.2	10.3	1342.3	37.4	1336.5	24.1	-1%
1441.0	9.5	1446.1	33.8	1444.0	21.3	0%
1500.1	22.9	1235.8	31.0	1335.9	26.9	18%
1217.0	14.6	1207.2	22.6	1210.8	17.8	1%
1849.1	9.0	1803.0	40.2	1824.5	23.0	2%
1350.6	11.7	1352.3	34.1	1351.6	22.6	0%
1263.8	9.8	1277.8	33.7	1272.6	22.1	-1%
1523.1	9.4	1527.2	41.4	1525.5	25.1	0%
1768.1	9.1	1759.9	34.4	1763.7	20.3	0%
1250.3	17.9	1213.7	25.3	1226.9	20.7	3%

1977.8	10.5	1995.9	39.9	1987.0	22.5	-1%
1238.9	11.0	1248.0	31.0	1244.7	21.0	-1%
2943.6	8.1	2949.1	68.8	2945.9	29.2	0%
1235.1	9.8	1252.1	27.9	1245.9	18.8	-1%
1518.4	10.7	1546.9	32.9	1534.9	20.8	-2%
1451.0	9.5	1433.5	38.6	1440.5	24.1	1%
1189.1	9.9	1094.1	37.7	1126.3	26.1	8%
1874.8	55.2	1534.1	34.3	1683.4	53.0	18%
1948.0	8.9	1846.7	47.2	1894.9	26.4	5%
1813.7	13.6	1827.2	30.2	1820.9	20.2	-1%
1804.6	9.1	1814.3	34.2	1809.8	20.0	-1%
1373.6	9.6	1338.4	28.5	1352.0	19.0	3%
1492.1	13.7	1443.4	29.3	1463.2	20.7	3%
1268.7	14.4	1252.7	25.0	1258.6	18.9	1%
1474.0	71.0	1532.5	40.6	1508.1	61.4	-4%
1216.0	9.8	1168.2	27.3	1185.1	19.0	4%
1474.4	36.2	1582.0	34.6	1536.5	35.4	-7%
1709.0	9.2	1579.4	51.1	1635.8	30.4	8%
1465.9	9.5	1459.3	30.2	1462.0	19.4	0%
1826.7	9.1	1850.1	46.4	1839.1	25.7	-1%
1947.7	8.9	1878.2	32.1	1911.4	18.9	4%
1497.2	9.5	1548.6	30.9	1527.0	19.2	-3%
2096.3	8.8	2195.4	56.2	2144.6	28.1	-5%
1151.0	11.4	1138.7	24.0	1143.0	17.5	1%
3025.6	8.0	2911.8	49.8	2979.5	22.4	4%
1726.3	9.2	1760.8	41.5	1745.1	23.7	-2%
1690.7	9.2	1546.3	40.7	1608.4	25.0	9%
2811.2	8.2	2781.4	42.0	2798.7	19.9	1%
1200.6	9.9	1174.9	29.8	1184.0	20.4	2%
1751.5	9.2	1765.0	30.0	1758.8	18.1	-1%
1491.4	9.5	1507.4	31.9	1500.8	20.0	-1%
1136.2	14.1	1146.3	20.8	1142.8	16.6	-1%
1245.2	9.8	1054.8	33.8	1118.8	24.3	15%
1606.9	9.3	1641.6	34.3	1626.4	20.6	-2%

1518.8	15.8	1512.4	31.3	1515.0	22.3	0%
2368.1	8.5	1867.8	69.9	2116.7	38.8	21%
1786.4	9.1	1810.2	36.7	1799.2	21.2	-1%
1152.8	59.2	1154.8	23.4	1154.1	43.0	0%
1796.0	9.1	1795.3	36.0	1795.6	20.9	0%
1512.4	9.7	1524.8	26.0	1519.6	17.0	-1%
1964.9	8.9	1965.2	35.4	1965.1	20.0	0%
1584.0	32.8	1547.1	34.4	1562.8	33.8	2%
1449.2	21.1	1431.9	34.5	1438.9	26.5	1%
1485.8	9.8	1468.7	23.4	1475.7	15.9	1%
1321.9	9.7	1344.2	27.8	1335.6	18.5	-2%
1482.4	10.0	1271.1	24.5	1352.0	17.6	14%
1271.0	17.3	1276.5	21.4	1274.4	18.4	0%
1799.6	9.1	1837.0	39.7	1819.5	22.4	-2%
1756.1	9.1	1727.0	32.3	1740.2	19.5	2%
1054.6	34.6	1025.3	23.8	1034.7	27.3	3%
1732.4	9.2	1745.2	42.2	1739.4	24.2	-1%
1825.3	9.1	1759.1	37.1	1789.6	21.8	4%
1552.4	14.4	1532.5	54.7	1540.9	33.6	1%
1989.5	8.9	1976.5	34.0	1982.9	19.3	1%
1447.0	11.1	1190.1	25.9	1284.9	19.2	18%
1801.4	3.7	1780.1	27.7	1790.0	15.3	1%
2716.4	2.3	2711.9	42.2	2714.4	18.1	0%
1433.8	21.7	1380.0	22.5	1401.3	21.9	4%
1284.3	11.0	1275.6	42.7	1278.9	27.8	1%
1494.9	14.7	1362.7	26.7	1415.1	20.2	9%
1196.5	21.0	1176.4	20.8	1183.5	19.9	2%
1727.9	4.3	1685.1	39.6	1704.2	22.2	2%
1796.2	6.8	1793.5	46.3	1794.8	25.4	0%
1060.8	68.7	1081.2	28.8	1074.5	48.1	-2%
1050.1	28.6	1070.5	27.4	1063.8	25.9	-2%
1099.6	9.5	1132.4	27.4	1121.3	18.9	-3%
1043.0	22.8	1059.4	24.2	1054.1	21.8	-2%
1008.6	67.5	808.3	22.7	863.7	41.6	20%

1062.8	59.8	1071.3	28.6	1068.5	42.8	-1%
1074.0	139.9	1054.8	36.6	1061.1	90.8	2%
1053.0	20.0	1064.8	29.2	1061.0	23.3	-1%
1180.4	71.2	1163.8	32.5	1169.6	52.9	1%
1051.9	44.4	1078.6	27.6	1069.8	33.9	-3%
1091.6	104.3	1068.5	32.8	1076.1	70.1	2%
1042.5	65.0	1079.0	31.4	1067.0	46.4	-4%
1044.9	26.1	1071.6	26.9	1062.9	24.5	-3%
1044.9	26.1	1071.6	26.9	1062.9	24.5	-3%
1029.8	88.4	1110.2	35.6	1083.3	60.8	-8%
1066.9	51.8	1072.0	25.9	1070.3	37.5	0%
1079.2	19.6	1095.9	24.9	1090.3	20.9	-2%
1072.2	69.9	1082.0	28.2	1078.8	48.8	-1%
1061.0	47.4	1080.7	24.6	1074.2	34.7	-2%
1092.9	45.0	1098.7	25.1	1096.7	33.9	-1%
1127.7	13.5	1150.2	31.0	1142.4	22.1	-2%
1050.4	53.2	1094.0	35.4	1079.5	41.4	-4%
1066.3	45.1	1083.5	27.6	1077.8	34.4	-2%
1069.9	80.6	1095.8	30.3	1087.2	55.6	-2%
1070.8	18.4	1093.6	44.0	1086.0	31.2	-2%
1052.4	53.3	1091.2	27.2	1078.3	38.7	-4%
1023.6	117.5	1087.0	36.1	1066.1	77.3	-6%
1066.6	29.8	1109.0	27.5	1094.8	26.6	-4%
1027.0	121.2	1090.9	33.8	1069.8	79.2	-6%
1068.2	25.8	1106.5	27.5	1093.6	24.7	-4%
1103.2	123.0	1077.4	36.0	1086.0	82.2	2%
1056.6	53.2	1091.2	29.6	1079.8	39.4	-3%
1066.6	52.5	1096.2	26.2	1086.3	38.2	-3%
1142.9	23.4	1083.5	26.6	1103.5	23.7	5%
1094.8	36.1	1053.5	27.7	1067.1	30.0	4%
1043.6	69.9	1051.9	31.1	1049.2	48.7	-1%
1103.8	77.1	1085.4	25.5	1091.5	53.0	2%

1078.7	44.6	1064.7	27.9	1069.3	34.3	1%
1079.5	40.9	1083.0	32.2	1081.9	34.1	0%
1097.8	45.6	1074.2	31.4	1082.1	36.3	2%
1066.7	18.2	1078.5	27.0	1074.6	21.5	-1%
1073.4	19.2	1062.4	28.5	1066.0	22.7	1%
1099.2	114.3	1074.8	30.0	1082.9	75.8	2%
1073.8	133.7	1039.3	30.9	1050.5	85.9	3%
1057.6	28.2	1060.5	25.7	1059.6	25.0	0%
1060.7	12.3	1037.1	28.1	1044.7	20.6	2%
1024.8	81.6	981.5	27.3	995.0	53.2	4%
1100.1	16.9	1053.8	29.7	1069.0	22.9	4%
1062.4	111.9	1035.7	31.6	1044.3	73.0	3%
1110.1	101.2	1089.3	29.5	1096.2	68.4	2%
1093.2	24.3	1063.7	24.7	1073.4	22.9	3%
1081.0	19.4	1078.3	28.1	1079.2	22.6	0%
1157.8	76.1	1111.7	31.8	1127.4	54.9	4%
1192.3	63.6	1176.5	36.3	1182.1	49.6	1%
1094.3	73.9	1041.3	35.7	1058.5	52.9	5%
1086.3	37.2	1053.1	23.9	1064.0	28.9	3%
1083.4	326.8	1105.1	56.3	1097.8	200.6	-2%
1092.8	38.7	1045.2	35.7	1060.7	34.7	4%
1436.8	14.8	1375.7	34.4	1399.8	23.9	4%
1155.1	68.7	1063.5	27.9	1094.0	49.0	8%
1060.9	63.7	1057.8	25.7	1058.8	44.1	0%
1342.7	62.9	1099.7	34.7	1184.4	50.2	18%
1051.6	25.1	1087.7	25.1	1075.8	23.2	-3%
1229.5	17.1	1226.3	28.4	1227.5	21.8	0%
1143.5	80.7	1080.2	32.2	1101.4	57.1	6%
1115.9	41.0	990.8	22.8	1030.5	30.6	11%
1075.3	31.7	1072.0	24.5	1073.1	26.3	0%
1105.9	142.8	1081.5	36.1	1089.6	94.0	2%
1075.8	39.9	1056.8	25.7	1063.0	31.0	2%

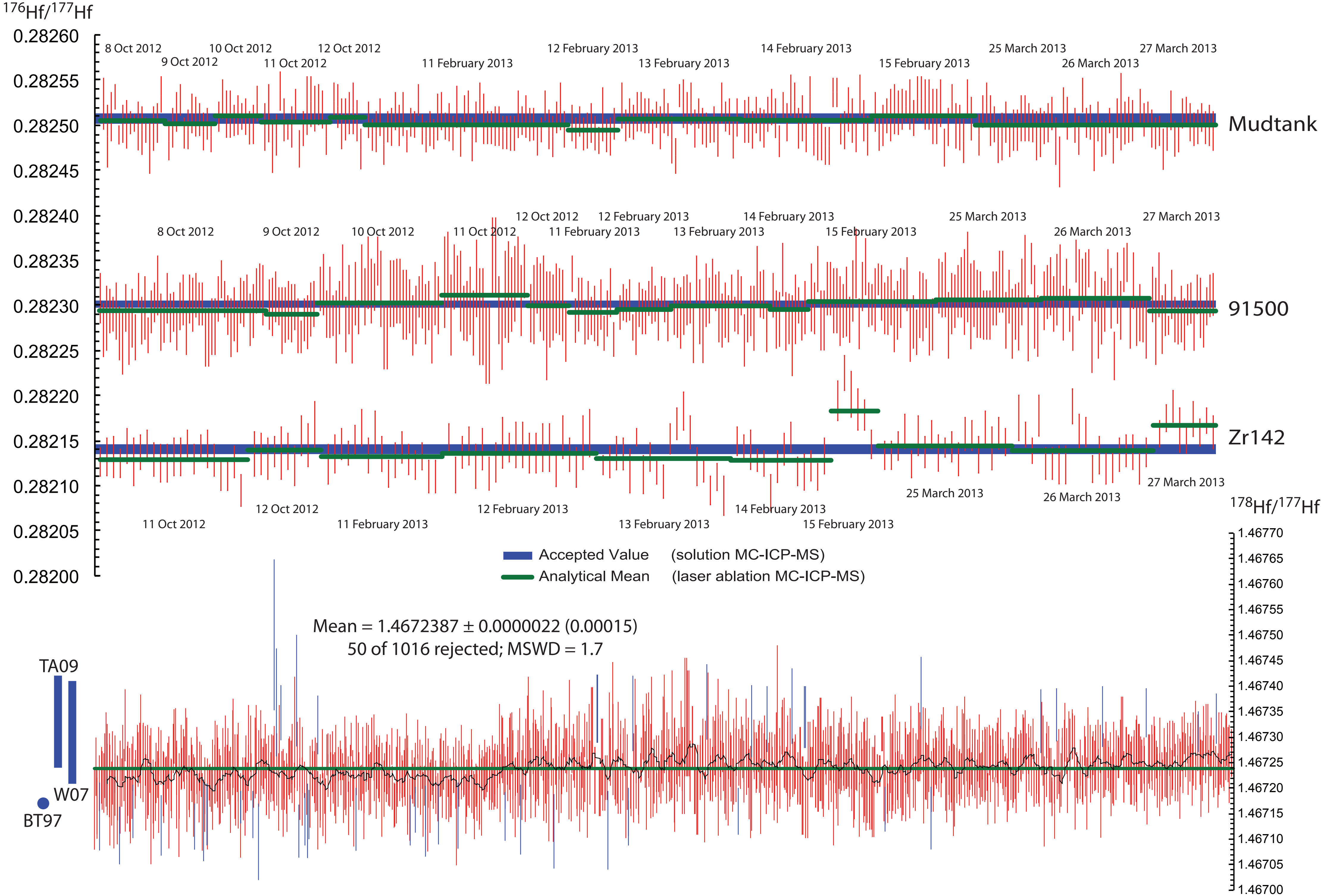
1173.4	47.6	1160.2	28.4	1164.8	37.5	1%
1146.5	146.8	1068.1	34.3	1094.2	96.9	7%
1124.1	41.2	1099.3	32.4	1107.7	34.7	2%
1069.8	160.3	1064.3	27.3	1066.1	101.6	1%
1082.4	36.0	1076.5	25.7	1078.4	29.0	1%
1063.8	29.6	1063.3	30.5	1063.5	27.9	0%
1501.0	11.6	1474.6	38.0	1485.5	24.2	2%
1079.0	33.1	1056.5	25.1	1063.8	27.2	2%
1067.7	46.1	1056.6	26.1	1060.2	34.4	1%
1064.7	32.9	1056.8	28.4	1059.4	28.4	1%
1091.6	39.3	1066.4	29.2	1074.7	32.2	2%
1214.0	91.2	1175.1	30.2	1188.9	65.7	3%
1091.3	62.8	1054.0	26.6	1066.2	44.2	3%
1079.1	26.2	1084.0	30.1	1082.4	26.2	0%
1058.2	120.8	1053.3	26.1	1054.9	77.7	0%
1067.0	192.4	1098.0	37.0	1087.7	122.4	-3%
1094.8	82.2	1103.8	28.0	1100.8	56.6	-1%
1081.2	58.0	1069.7	29.2	1073.5	42.2	1%
1060.4	35.6	1067.3	26.8	1065.1	29.1	-1%
1109.1	89.7	1060.7	26.7	1076.6	60.5	4%
1074.1	23.1	1060.3	27.3	1064.8	23.6	1%
1089.0	34.6	1058.2	26.7	1068.3	28.7	3%
1046.5	50.3	1065.8	25.8	1059.5	36.4	-2%
1025.1	156.5	1064.6	27.9	1051.7	98.1	-4%
1050.9	95.7	1034.2	28.1	1039.5	62.7	2%
1090.3	79.4	1080.9	28.8	1084.0	54.7	1%
1061.6	50.9	1080.0	25.7	1073.9	37.0	-2%
1052.9	51.5	1074.3	24.6	1067.2	36.9	-2%
1039.6	39.1	1076.2	25.8	1064.2	30.4	-4%
1087.1	55.6	1089.8	26.7	1088.9	40.3	0%
1073.1	70.6	1084.6	30.8	1080.8	49.8	-1%
1110.2	50.9	1124.2	33.4	1119.5	40.2	-1%

1066.7	126.3	1087.0	29.5	1080.3	82.4	-2%
1089.0	60.1	1085.7	30.1	1086.8	43.9	0%
1068.7	23.0	1036.4	25.0	1046.9	22.5	3%
1084.4	34.1	1045.5	27.6	1058.2	28.8	4%
1025.5	31.5	1028.1	29.3	1027.2	28.0	0%
1007.4	189.4	996.7	32.7	1000.0	114.2	1%
1092.8	54.1	1049.7	24.5	1063.8	38.6	4%
1753.9	273.8	1061.8	54.2	1314.3	202.7	39%
1066.5	58.7	1058.0	27.2	1060.8	41.7	1%
1048.8	85.8	998.0	29.6	1014.0	56.8	5%
1085.6	74.2	1073.2	31.3	1077.3	52.1	1%
1172.0	11.0	1145.5	29.8	1154.7	20.8	2%
1119.7	49.4	1080.3	28.8	1093.4	37.7	4%
1066.3	55.8	1052.6	27.7	1057.1	40.2	1%
1110.3	72.1	1071.4	33.6	1084.3	51.8	3%
1060.3	161.9	1038.0	42.7	1045.2	103.5	2%
1122.9	48.2	1068.9	24.2	1086.9	35.6	5%
1052.6	79.0	1064.4	33.5	1060.6	54.8	-1%
1121.2	73.9	1050.1	29.0	1073.5	51.6	6%
1077.2	35.7	1035.1	26.3	1048.7	29.0	4%
1592.3	9.5	1517.4	53.3	1549.0	32.0	5%
1049.6	8.8	1002.5	37.5	1017.4	26.3	4%
1572.0	14.7	1460.1	50.8	1506.3	32.5	7%
1357.5	14.9	1179.4	43.0	1243.9	30.3	13%
1048.1	12.5	1039.7	42.0	1042.4	29.3	1%
1062.8	81.0	1018.9	37.2	1033.0	56.6	4%
1074.0	14.4	1089.4	41.7	1084.3	29.0	-1%
1164.4	16.5	1143.6	41.9	1150.8	29.5	2%
1597.8	15.1	1568.3	56.9	1580.9	34.7	2%
1513.8	21.0	1507.2	54.9	1510.0	36.0	0%
1421.1	6.2	1291.5	48.0	1341.1	30.6	9%
1009.2	70.2	998.8	40.4	1002.1	50.9	1%

1651.0	5.0	1660.1	62.2	1656.1	34.5	-1%
1655.4	3.5	1616.7	69.7	1633.6	39.2	2%
1636.7	10.1	1524.3	53.8	1572.0	32.5	7%
1060.1	19.2	1013.8	39.2	1028.6	29.4	4%
1675.3	4.4	1641.1	60.3	1656.1	33.8	2%
1876.2	2.3	1713.4	58.6	1788.0	32.4	9%
1862.7	3.2	1957.3	66.6	1911.8	33.7	-5%
1314.1	63.6	1307.5	61.6	1310.0	59.9	1%
1250.4	63.4	1165.8	47.4	1195.8	53.8	7%
1607.1	9.2	1506.1	58.1	1548.6	34.8	6%
1001.8	12.2	977.5	44.4	985.0	31.4	2%
1652.5	4.5	1592.8	63.8	1618.7	36.3	4%
1454.2	8.9	1446.7	54.3	1449.7	32.7	1%
1103.3	37.2	1107.8	40.2	1106.3	36.0	0%
1345.4	10.0	1298.5	47.0	1316.3	30.1	3%
1737.1	5.3	1726.0	60.8	1731.0	33.3	1%
1404.0	30.5	1383.3	49.7	1391.5	38.1	1%
1102.2	13.8	1090.2	38.7	1094.2	27.1	1%
1204.9	37.7	1185.2	44.8	1192.2	38.9	2%
973.5	85.5	973.4	37.1	973.4	56.9	0%
1658.0	18.9	1614.8	57.6	1633.7	36.2	3%
1620.2	9.8	1582.4	57.6	1598.7	33.7	2%
1535.4	7.8	1421.3	49.8	1467.7	30.6	7%
1248.7	8.9	1233.4	46.5	1239.0	30.0	1%
975.7	24.6	967.4	35.7	970.0	28.7	1%
1334.7	33.1	1312.1	44.8	1320.8	37.0	2%
1480.9	7.5	1493.0	54.5	1488.0	32.2	-1%
1649.2	6.0	1645.4	59.2	1647.0	33.2	0%
1652.6	6.3	1642.3	58.3	1646.8	32.9	1%
1622.4	15.1	1672.4	60.3	1650.3	35.4	-3%
1601.5	19.9	1498.3	59.6	1541.6	38.6	6%
1316.0	13.8	1281.5	54.3	1294.5	35.2	3%

1044.0	41.5	872.7	40.0	922.6	38.1	16%
1644.6	34.8	1578.0	67.1	1606.8	48.1	4%
1100.5	104.4	1068.5	46.4	1079.1	73.4	3%
1304.3	24.9	1247.6	51.7	1268.6	37.3	4%
1047.8	20.2	1014.5	38.7	1025.1	29.3	3%
1536.1	17.8	1529.8	53.3	1532.5	34.0	0%
1114.4	13.6	1101.1	40.0	1105.6	27.8	1%
1688.4	17.0	1663.6	58.2	1674.6	35.4	1%
1640.9	15.7	1643.0	59.1	1642.1	35.4	0%
1659.7	10.1	1671.1	58.4	1666.0	33.3	-1%
1302.3	85.8	1243.3	53.5	1265.1	70.0	5%
1530.8	10.4	1418.7	50.3	1464.2	31.4	7%
1571.7	16.9	1429.4	80.4	1487.6	50.0	9%
1406.9	9.3	1331.9	54.7	1360.9	34.4	5%
1657.0	4.4	1596.5	56.8	1622.8	32.4	4%
1492.4	40.3	1321.0	46.9	1388.0	43.0	11%
1047.7	23.0	1031.6	38.4	1036.8	29.7	2%
1229.8	46.1	1151.9	45.9	1179.3	43.8	6%
1074.0	13.5	1040.0	38.6	1051.0	27.5	3%
1764.5	7.4	1739.5	61.2	1750.9	33.7	1%
2667.2	2.5	2536.4	86.4	2609.8	38.3	5%
1076.5	15.1	1060.5	40.5	1065.8	28.7	1%
1661.1	6.9	1616.7	57.7	1636.1	33.0	3%
1349.9	17.4	1361.8	46.4	1357.2	31.0	-1%
1617.6	19.8	1558.1	54.4	1583.6	35.3	4%
1058.0	37.2	1044.1	37.0	1048.6	34.3	1%
1432.5	10.7	1374.4	49.5	1397.3	31.1	4%
1812.2	8.1	1669.0	58.3	1733.5	33.4	8%
1664.2	9.8	1586.4	57.3	1620.2	33.7	5%
1342.0	16.7	1290.1	47.2	1309.7	31.9	4%
1024.0	9.6	989.8	35.7	1000.5	25.3	3%
1331.8	32.4	1298.3	48.7	1311.0	38.6	3%

Data supplement 11: Hf analyses of reference materials and stable isotope ratios for chapter 5.



Data supplement 12: Detrital zircon Hf data for chapter 5.

Hf	Spot	178Hf/177Hf	1s%	176Hf/177Hf	1s%	176Yb/177Hf	1s%
Siam1	1	1.467204	0.0023	0.281228	0.0060	0.031935	1.7
Siam1	4	1.467191	0.0027	0.281219	0.0062	0.038561	4.8
Siam1	5	1.467133	0.0031	0.281295	0.0070	0.011893	5.1
Siam1	6	1.467190	0.0022	0.281556	0.0056	0.022105	2.7
Siam1	7	1.467216	0.0025	0.281529	0.0056	0.002419	2.4
Siam1	8	1.467260	0.0025	0.281258	0.0073	0.057715	2.1
Siam1	9	1.467130	0.0020	0.281211	0.0065	0.035248	1.4
Siam1	10	1.467160	0.0022	0.281533	0.0048	0.010899	6.2
Siam1	11	1.467166	0.0035	0.281707	0.0060	0.028915	2.5
Siam1	13	1.467186	0.0029	0.280924	0.0063	0.003434	4.7
Siam1	18	1.467177	0.0025	0.281065	0.0059	0.028330	3.9
Siam1	20	1.467181	0.0020	0.281344	0.0048	0.075058	1.2
Siam1	14	1.467258	0.0043	0.281637	0.0063	0.052089	3.3
Siam1	22	1.467264	0.0067	0.281161	0.0091	0.030466	13.1
Siam1	23	1.467032	0.0041	0.281452	0.0058	0.014963	15.6
Siam1	24	1.467128	0.0050	0.281156	0.0077	0.070203	15.4
Siam1	25	1.467051	0.0057	0.281254	0.0077	0.038367	15.6
Siam1	26	1.467153	0.0043	0.281660	0.0058	0.023089	12.1
Siam1	29	1.467188	0.0027	0.281418	0.0050	0.040308	6.4
Siam1	30	1.467225	0.0028	0.280974	0.0055	0.052957	2.1
Siam1	31	1.467192	0.0046	0.281609	0.0083	0.034633	7.3
Siam1	32	1.467197	0.0045	0.280886	0.0064	0.006307	2.0
Siam1	33	1.467158	0.0042	0.281293	0.0059	0.037162	1.6
Siam1	34	1.467136	0.0034	0.280857	0.0069	0.004246	2.8
Siam1	35	1.467234	0.0031	0.281663	0.0062	0.025252	6.1
Siam1	36	1.467297	0.0033	0.281063	0.0066	0.022984	2.5
Siam1	37	1.467250	0.0036	0.281027	0.0061	0.020884	4.6
Siam1	38	1.467203	0.0030	0.281575	0.0059	0.016570	2.0
Siam1	39	1.467182	0.0033	0.281025	0.0058	0.002423	2.2
Siam1	40	1.467166	0.0029	0.281148	0.0061	0.022266	2.9
Siam1	41	1.467102	0.0031	0.281393	0.0058	0.014341	3.6
Siam1	42	1.467180	0.0026	0.281524	0.0059	0.004016	3.3
Siam1	44	1.467239	0.0028	0.280894	0.0062	0.006840	3.2
Siam1	45	1.467151	0.0023	0.281322	0.0079	0.047541	2.3
Siam1	46	1.467192	0.0032	0.281262	0.0062	0.017680	5.8
Siam1	47	1.467222	0.0025	0.281216	0.0054	0.071234	6.7
Siam1	48	1.467184	0.0033	0.281220	0.0061	0.035628	3.7
Siam1	49	1.467163	0.0034	0.281646	0.0054	0.013025	2.2
Siam1	50	1.467163	0.0037	0.281591	0.0083	0.012341	4.3
Siam1	51	1.467186	0.0030	0.281577	0.0062	0.051113	1.2
Siam1	52	1.467171	0.0030	0.280964	0.0053	0.022888	2.5
Siam1	53	1.467196	0.0024	0.281074	0.0065	0.031353	2.3
Siam1	54	1.467279	0.0037	0.281468	0.0062	0.014960	4.4
Siam1	55	1.467190	0.0038	0.281362	0.0068	0.037511	3.7
Siam1	56	1.467114	0.0028	0.280798	0.0051	0.010835	4.7
Siam1	57	1.467255	0.0028	0.281146	0.0062	0.023000	2.0
Siam1	59	1.467183	0.0024	0.280872	0.0064	0.034442	3.0
Siam1	72	1.467185	0.0030	0.281206	0.0058	0.022282	4.1
Siam1	73	1.467164	0.0030	0.281588	0.0059	0.054225	2.8
Siam1	74	1.467189	0.0036	0.281329	0.0063	0.023865	2.1
Siam1	75	1.467272	0.0033	0.280796	0.0062	0.039565	0.5
Siam1	76	1.467186	0.0031	0.281795	0.0063	0.052768	2.1
Siam1	77	1.467215	0.0031	0.281297	0.0049	0.035120	2.0
Siam1	78	1.467243	0.0027	0.281201	0.0058	0.036926	1.4
Siam1	79	1.467153	0.0027	0.280942	0.0050	0.010036	2.3
Siam1	80	1.467179	0.0028	0.281343	0.0047	0.038447	2.5

Siam1	86	1.467163	0.0026	0.280756	0.0064	0.039883	2.1
Siam1	88	1.467103	0.0035	0.281090	0.0058	0.018039	3.0
Siam1	89	1.467134	0.0031	0.281186	0.0055	0.025819	2.8
Siam1	90	1.467188	0.0029	0.281219	0.0059	0.044926	6.2
Siam1	91	1.467168	0.0026	0.280851	0.0062	0.009546	2.3
Siam1	92	1.467216	0.0027	0.281316	0.0049	0.016892	6.5
Siam1	93	1.467107	0.0028	0.281600	0.0058	0.034464	2.6
Siam1	94	1.467201	0.0029	0.281328	0.0051	0.044469	3.1
Siam1	96	1.467211	0.0025	0.281165	0.0053	0.037344	3.9
Siam1	97	1.467207	0.0023	0.280924	0.0064	0.013098	4.3
Siam1	95	1.467129	0.0025	0.281596	0.0053	0.030431	3.1
Siam1	98	1.467177	0.0027	0.280924	0.0057	0.022723	2.4
Siam1	100	1.467162	0.0031	0.281214	0.0051	0.060821	9.5
Siam1	101	1.467220	0.0024	0.280927	0.0061	0.025781	5.8
Siam1	102	1.467200	0.0022	0.281365	0.0061	0.009739	2.4
Siam1	111	1.467251	0.0021	0.281362	0.0047	0.027642	3.1
Siam1	112	1.467093	0.0022	0.281018	0.0050	0.050817	3.0
CS11-18	1	1.467221	0.0031	0.282085	0.0055	0.029338	4.6
CS11-18	2	1.467215	0.0023	0.281737	0.0050	0.023217	1.1
CS11-18	3	1.467185	0.0026	0.281773	0.0050	0.020326	1.8
CS11-18	4	1.467235	0.0029	0.281059	0.0043	0.013109	7.6
CS11-18	5	1.467209	0.0038	0.281724	0.0066	0.055561	3.9
CS11-18	7	1.467285	0.0031	0.281714	0.0057	0.071630	4.1
CS11-18	8	1.467275	0.0040	0.281144	0.0043	0.025346	1.9
CS11-18	9	1.467241	0.0038	0.281700	0.0043	0.035229	2.3
CS11-18	10	1.467279	0.0030	0.281720	0.0039	0.026404	5.2
CS11-18	11	1.467475	0.0078	0.281756	0.0140	0.030310	6.3
CS11-18	12	1.467225	0.0027	0.281749	0.0041	0.040645	4.0
CS11-18	13	1.467245	0.0037	0.281746	0.0046	0.039379	2.7
CS11-18	14	1.467174	0.0029	0.281140	0.0070	0.075130	1.2
CS11-18	15	1.467229	0.0032	0.281064	0.0066	0.021655	4.5
CS11-18	16	1.467194	0.0024	0.281669	0.0043	0.024567	0.9
CS11-18	17	1.467201	0.0034	0.281723	0.0052	0.036725	3.6
CS11-18	18	1.467210	0.0032	0.281678	0.0048	0.039265	3.0
CS11-18	19	1.467211	0.0030	0.281724	0.0061	0.017451	1.9
CS11-18	20	1.467103	0.0030	0.281737	0.0057	0.064331	0.7
CS11-18	21	1.467214	0.0033	0.281729	0.0046	0.069712	4.1
CS11-18	22	1.467171	0.0027	0.281712	0.0046	0.016559	4.8
CS11-18	23	1.467208	0.0033	0.281104	0.0047	0.048036	3.6
CS11-18	24	1.467211	0.0031	0.281643	0.0034	0.029077	0.7
CS11-18	26	1.467187	0.0038	0.281714	0.0057	0.032492	4.3
CS11-18	27	1.467232	0.0040	0.281090	0.0055	0.025560	2.4
CS11-18	29	1.467202	0.0038	0.281690	0.0038	0.030089	0.6
CS11-18	30	1.467219	0.0034	0.281767	0.0068	0.017737	3.1
CS11-18	32	1.467203	0.0035	0.281666	0.0053	0.036573	1.9
CS11-18	33	1.467285	0.0038	0.281680	0.0039	0.000466	3.4
CS11-18	35	1.467272	0.0031	0.281494	0.0038	0.019942	3.2
CS11-18	36	1.467240	0.0026	0.281027	0.0050	0.025288	5.7
CS11-18	37	1.467242	0.0030	0.281744	0.0053	0.032221	1.6
CS11-18	38	1.467181	0.0031	0.281067	0.0055	0.026007	12.9
CS11-18	39	1.467283	0.0030	0.281141	0.0061	0.054147	8.6
CS11-18	40	1.467244	0.0030	0.281729	0.0055	0.084858	1.6
CS11-18	41	1.467228	0.0029	0.281233	0.0059	0.044061	4.2
CS11-18	42	1.467203	0.0023	0.281787	0.0052	0.063936	0.7
CS11-18	43	1.467265	0.0023	0.281705	0.0032	0.026342	2.6
CS11-18	44	1.467232	0.0035	0.281070	0.0045	0.018572	13.0
CS11-18	46	1.467323	0.0028	0.281733	0.0041	0.054356	1.9

CS11-18	47	1.467245	0.0021	0.281042	0.0041	0.027098	2.6
CS11-18	48	1.467278	0.0022	0.281008	0.0043	0.016422	4.5
CS11-18	49	1.467181	0.0021	0.281067	0.0039	0.020617	5.0
CS11-18	50	1.467157	0.0028	0.281058	0.0038	0.021271	1.8
CS11-18	53	1.467218	0.0022	0.281076	0.0041	0.069859	4.4
CS11-18	63	1.467229	0.0022	0.281041	0.0039	0.015760	16.5
CS11-18	64	1.467240	0.0024	0.281091	0.0055	0.021801	7.1
CS11-18	65	1.467270	0.0025	0.281039	0.0041	0.018543	3.1
CS11-18	66	1.467232	0.0023	0.281091	0.0045	0.020575	3.5
CS11-18	72	1.467145	0.0023	0.281043	0.0045	0.086912	8.5
CS11-19	1	1.467239	0.0028	0.281668	0.0052	0.027974	2.3
CS11-19	3	1.467195	0.0026	0.281746	0.0050	0.052746	1.7
CS11-19	5	1.467245	0.0027	0.281794	0.0068	0.038520	1.9
CS11-19	6	1.467191	0.0032	0.281999	0.0043	0.043714	3.2
CS11-19	8	1.467277	0.0025	0.282210	0.0053	0.040402	4.2
CS11-19	9	1.467206	0.0031	0.281651	0.0043	0.046099	6.3
CS11-19	10	1.467193	0.0024	0.281936	0.0045	0.040190	3.2
CS11-19	12	1.467221	0.0032	0.281720	0.0046	0.059887	2.9
CS11-19	13	1.467208	0.0027	0.282017	0.0038	0.028682	4.9
CS11-19	14	1.467215	0.0027	0.281742	0.0043	0.031819	2.5
CS11-19	16	1.467167	0.0021	0.281796	0.0043	0.084121	1.5
CS11-19	18	1.467225	0.0028	0.282145	0.0041	0.050134	7.2
CS11-19	19	1.467161	0.0036	0.282150	0.0048	0.078024	3.7
CS11-19	20	1.467164	0.0029	0.281821	0.0053	0.076315	5.0
CS11-19	23	1.467187	0.0029	0.282009	0.0050	0.039945	5.1
CS11-19	24	1.467164	0.0027	0.281752	0.0050	0.086867	3.9
CS11-19	25	1.467252	0.0028	0.281339	0.0029	0.019083	2.1
CS11-19	26	1.467229	0.0028	0.281780	0.0045	0.038991	5.3
CS11-19	27	1.467182	0.0036	0.281932	0.0076	0.128208	3.1
CS11-19	28	1.467243	0.0034	0.281776	0.0061	0.025596	1.9
CS11-19	30	1.467235	0.0028	0.281831	0.0053	0.030604	2.5
CS11-19	31	1.467222	0.0025	0.281766	0.0041	0.019587	6.6
CS11-19	32	1.467178	0.0024	0.281768	0.0061	0.034457	1.4
CS11-19	33	1.467148	0.0022	0.281963	0.0043	0.016868	2.1
CS11-19	35	1.467159	0.0024	0.281799	0.0061	0.058232	4.0
CS11-19	38	1.467231	0.0023	0.281753	0.0027	0.050451	6.4
CS11-19	39	1.467195	0.0025	0.281973	0.0052	0.029455	3.9
CS11-19	40	1.467323	0.0031	0.281826	0.0046	0.029602	4.6
CS11-19	41	1.467229	0.0028	0.281715	0.0039	0.018746	8.8
CS11-19	42	1.467327	0.0031	0.281213	0.0039	0.025340	2.9
CS11-19	43	1.467193	0.0021	0.281783	0.0039	0.037121	1.4
CS11-19	44	1.467193	0.0025	0.281762	0.0034	0.024558	1.3
CS11-19	45	1.467193	0.0024	0.281739	0.0041	0.038562	4.1
CS11-19	46	1.467226	0.0027	0.282147	0.0039	0.074989	8.1
CS11-19	47	1.467165	0.0027	0.281692	0.0039	0.040626	2.0
CS11-19	48	1.467250	0.0026	0.281757	0.0050	0.018102	1.4
CS11-19	49	1.467251	0.0021	0.281809	0.0046	0.103557	3.6
CS11-19	50	1.467240	0.0023	0.281558	0.0041	0.038761	1.0
CS11-19	51	1.467220	0.0024	0.281313	0.0039	0.012304	2.5
CS11-19	52	1.467201	0.0020	0.281494	0.0038	0.014958	2.9
CS11-19	54	1.467219	0.0030	0.281892	0.0062	0.131601	2.0
CS11-19	55	1.467267	0.0027	0.281729	0.0036	0.028562	12.4
CS11-19	57	1.467226	0.0025	0.281708	0.0045	0.026398	2.1
CS11-19	58	1.467214	0.0022	0.281876	0.0041	0.079307	1.5
CS11-19	60	1.467172	0.0025	0.282055	0.0041	0.033697	12.3
CS11-19	63	1.467183	0.0025	0.281996	0.0055	0.027682	5.2
CS11-19	61	1.467216	0.0024	0.281965	0.0043	0.038238	4.9

CS11-19	71	1.467141	0.0030	0.281934	0.0038	0.057967	1.3
CS11-19	74	1.467187	0.0036	0.281967	0.0048	0.021074	2.5
CS11-19	76	1.467180	0.0030	0.282078	0.0068	0.031484	1.4
CS11-20	46.1	1.467089	0.0039	0.281975	0.0050	0.054497	1.4
CS11-20	46.2	1.467179	0.0030	0.282027	0.0027	0.054959	1.8
CS11-20	46.3	1.467233	0.0025	0.281961	0.0045	0.054859	1.7
CS11-20	46.4	1.467255	0.0036	0.281989	0.0045	0.055123	1.7
CS11-20	46.5	1.467238	0.0028	0.281997	0.0045	0.055126	2.0
CS11-20	46.6	1.467210	0.0033	0.281980	0.0052	0.055447	1.9
CS11-20	46.7	1.467216	0.0030	0.281974	0.0034	0.055049	1.8
CS11-20	46.8	1.467243	0.0032	0.281988	0.0057	0.057352	1.8
CS11-20	46.9	1.467122	0.0034	0.281990	0.0059	0.055008	1.8
CS11-20	3	1.467338	0.0027	0.282146	0.0025	0.018508	1.9
CS11-20	4	1.467243	0.0022	0.281717	0.0041	0.035387	1.8
CS11-20	7	1.467263	0.0022	0.281759	0.0035	0.012615	4.7
CS11-20	8	1.467282	0.0025	0.281795	0.0034	0.033417	5.5
CS11-20	9	1.467239	0.0025	0.281854	0.0034	0.036823	4.0
CS11-20	12	1.467221	0.0026	0.281724	0.0030	0.019477	1.2
CS11-20	13	1.467237	0.0021	0.281077	0.0027	0.022790	1.9
CS11-20	15	1.467303	0.0028	0.282029	0.0034	0.017105	12.4
CS11-20	16	1.467354	0.0026	0.281851	0.0050	0.087500	2.8
CS11-20	17	1.467295	0.0022	0.281809	0.0037	0.022686	1.4
CS11-20	18	1.467215	0.0025	0.281763	0.0046	0.023034	3.2
CS11-20	25	1.467325	0.0024	0.282146	0.0043	0.011816	6.3
CS11-20	27	1.467269	0.0023	0.282104	0.0032	0.044143	1.8
CS11-20	28	1.467254	0.0020	0.281012	0.0030	0.009900	3.7
CS11-20	29	1.467238	0.0022	0.282164	0.0039	0.019395	3.4
CS11-20	31	1.467253	0.0026	0.280917	0.0050	0.017083	4.2
CS11-20	33	1.467326	0.0022	0.281638	0.0041	0.018257	6.7
CS11-20	34	1.467240	0.0027	0.282186	0.0053	0.013878	3.4
CS11-20	37	1.467235	0.0029	0.281736	0.0032	0.021547	1.1
CS11-20	39	1.467227	0.0022	0.281782	0.0030	0.047172	2.6
CS11-20	41	1.467234	0.0022	0.281745	0.0030	0.031858	5.1
CS11-20	42	1.467305	0.0023	0.281795	0.0023	0.014635	5.1
CS11-20	43	1.467240	0.0025	0.281805	0.0032	0.018848	5.4
CS11-20	47	1.467286	0.0031	0.282248	0.0041	0.030513	5.7
CS11-20	49	1.467229	0.0028	0.281767	0.0057	0.028053	6.4
CS11-20	51	1.467275	0.0033	0.281612	0.0050	0.014607	2.4
CS11-20	52	1.467280	0.0025	0.281826	0.0041	0.075843	6.9
CS11-20	55	1.467249	0.0023	0.281903	0.0028	0.010901	13.0
CS11-20	56	1.467327	0.0023	0.281873	0.0030	0.013954	8.4
CS11-20	57	1.467295	0.0033	0.282020	0.0059	0.082364	7.8
CS11-20	60	1.467271	0.0024	0.281691	0.0046	0.013655	3.2
CS11-20	63	1.467160	0.0023	0.281716	0.0035	0.024231	3.7
CS11-20	64	1.467238	0.0021	0.282024	0.0039	0.028447	1.1
CS11-20	66	1.467222	0.0027	0.281846	0.0037	0.130684	6.6
CS11-20	72	1.467196	0.0023	0.281670	0.0027	0.028037	5.5
CS11-20	74	1.467245	0.0025	0.281870	0.0044	0.038115	6.8
CS11-20	75	1.467251	0.0029	0.281842	0.0034	0.021030	2.3
CS11-5	3	1.467207	0.0030	0.282013	0.0048	0.092826	3.1
CS11-5	4	1.467153	0.0034	0.281718	0.0056	0.040960	1.0
CS11-5	5	1.467183	0.0029	0.281544	0.0043	0.031669	1.0
CS11-5	6	1.467255	0.0029	0.282048	0.0052	0.068319	1.6
CS11-5	8	1.467186	0.0028	0.281373	0.0043	0.009628	8.1
CS11-5	11	1.467267	0.0032	0.280947	0.0096	0.025356	3.8
CS11-5	12	1.467242	0.0031	0.281769	0.0056	0.030793	1.6

CS11-5	14	1.467226	0.0037	0.281066	0.0052	0.021878	8.1
CS11-5	15	1.467295	0.0037	0.282191	0.0061	0.034848	1.8
CS11-5	16	1.467125	0.0029	0.281641	0.0056	0.025877	0.8
CS11-5	17	1.467195	0.0033	0.282029	0.0058	0.110781	1.5
CS11-5	21	1.467201	0.0041	0.281607	0.0053	0.020536	3.3
CS11-5	22	1.467214	0.0038	0.281929	0.0059	0.027554	3.9
CS11-5	24	1.467225	0.0035	0.281750	0.0056	0.031428	3.5
CS11-5	26	1.467207	0.0035	0.282158	0.0056	0.033758	4.6
CS11-5	29	1.467280	0.0028	0.281982	0.0061	0.028562	8.1
CS11-5	33	1.467208	0.0032	0.281563	0.0056	0.061664	1.7
CS11-5	34	1.467269	0.0031	0.281742	0.0048	0.031427	2.8
CS11-5	35	1.467265	0.0031	0.281919	0.0053	0.021231	3.9
CS11-5	36	1.467197	0.0034	0.281944	0.0055	0.029517	7.9
CS11-5	37	1.467201	0.0025	0.281931	0.0043	0.039205	1.9
CS11-5	39	1.467183	0.0027	0.282060	0.0055	0.033585	7.1
CS11-5	40	1.467248	0.0031	0.281701	0.0070	0.041822	1.8
CS11-5	41	1.467214	0.0033	0.281704	0.0046	0.071417	5.2
CS11-5	42	1.467172	0.0033	0.281892	0.0042	0.015657	3.4
CS11-5	43	1.467124	0.0031	0.281776	0.0050	0.042929	2.0
CS11-5	45	1.467168	0.0037	0.281597	0.0061	0.047918	0.8
CS11-5	46	1.467167	0.0046	0.281922	0.0048	0.040880	1.7
CS11-5	47	1.467207	0.0040	0.281502	0.0067	0.025780	3.3
CS11-5	50	1.467252	0.0031	0.281599	0.0046	0.045696	1.6
CS11-5	52	1.467243	0.0031	0.281056	0.0047	0.028087	3.3
CS11-5	8b	1.467271	0.0027	0.282060	0.0046	0.057537	3.9
CS11-5	26b	1.467290	0.0030	0.282174	0.0043	0.049204	1.7
CS11-6	1	1.467197	0.0028	0.281841	0.0056	0.076121	1.1
CS11-6	3	1.467167	0.0029	0.281657	0.0055	0.026412	1.9
CS11-6	4	1.467253	0.0034	0.282017	0.0056	0.029774	7.3
CS11-6	5	1.467184	0.0032	0.282149	0.0049	0.074001	0.3
CS11-6	7	1.467172	0.0029	0.281737	0.0048	0.002737	3.4
CS11-6	8	1.467259	0.0027	0.281237	0.0052	0.006690	3.2
CS11-6	9	1.467168	0.0030	0.282164	0.0044	0.091427	8.8
CS11-6	10	1.467198	0.0026	0.281978	0.0046	0.025670	0.6
CS11-6	12	1.467233	0.0028	0.281817	0.0070	0.030300	3.4
CS11-6	13	1.467275	0.0026	0.281732	0.0043	0.028170	0.6
CS11-6	14	1.467161	0.0026	0.282059	0.0049	0.043345	11.5
CS11-6	16	1.467180	0.0026	0.281629	0.0053	0.026669	0.7
CS11-6	15	1.467159	0.0028	0.282215	0.0059	0.031997	2.6
CS11-6	17	1.467186	0.0026	0.282171	0.0052	0.133661	5.9
CS11-6	20	1.467222	0.0025	0.281235	0.0052	0.020421	2.8
CS11-6	22	1.467209	0.0027	0.281837	0.0050	0.021499	2.2
CS11-6	24	1.467166	0.0027	0.281799	0.0053	0.019801	5.3
CS11-6	25	1.467255	0.0032	0.281938	0.0055	0.052848	5.4
CS11-6	27	1.467267	0.0025	0.281826	0.0048	0.060515	2.2
CS11-6	28	1.467261	0.0029	0.281925	0.0055	0.034217	3.5
CS11-6	29	1.467171	0.0032	0.282068	0.0053	0.031659	3.5
CS11-6	30	1.467112	0.0028	0.281758	0.0044	0.042914	2.3
CS11-6	31	1.467166	0.0034	0.282088	0.0045	0.021296	7.3
CS11-6	32	1.467174	0.0027	0.281759	0.0046	0.039311	1.7
CS11-6	34	1.467253	0.0029	0.281466	0.0039	0.034524	4.6
CS11-6	35	1.467169	0.0027	0.281706	0.0043	0.033552	2.8
CS11-6	37	1.467200	0.0029	0.282159	0.0056	0.024874	2.9
CS11-6	38	1.467163	0.0026	0.281678	0.0046	0.034800	3.1
CS11-6	39	1.467198	0.0029	0.282131	0.0049	0.047985	2.5
CS11-6	40	1.467185	0.0029	0.282071	0.0049	0.034469	1.8
CS11-6	41	1.467221	0.0028	0.282041	0.0056	0.042461	7.9

CS11-6	42	1.467218	0.0027	0.281676	0.0049	0.024915	0.9
CS11-6	45	1.467207	0.0039	0.282126	0.0052	0.038705	0.7
CS11-6	46	1.467209	0.0029	0.281585	0.0047	0.022458	1.2
CS11-6	47	1.467166	0.0026	0.282124	0.0050	0.024232	2.2
CS11-6	48	1.467195	0.0028	0.280899	0.0053	0.034290	3.3
CS11-6	50	1.467178	0.0028	0.282195	0.0058	0.144383	2.9
CS11-6	51	1.467201	0.0030	0.282017	0.0049	0.022785	1.7
CS11-6	16b	1.467212	0.0028	0.281716	0.0040	0.022294	3.3
CS11-6	34b	1.467246	0.0027	0.281486	0.0057	0.057538	3.1
CS11-6	34c	1.467255	0.0026	0.281469	0.0041	0.021398	1.1
CS11-1	1	1.467225	0.0028	0.282176	0.0064	0.040141	3.1
CS11-1	5	1.467195	0.0027	0.282093	0.0046	0.027295	2.1
CS11-1	6	1.467251	0.0027	0.282138	0.0050	0.072041	2.9
CS11-1	8	1.467192	0.0033	0.281918	0.0043	0.055772	3.5
CS11-1	9	1.467235	0.0032	0.282106	0.0046	0.071134	7.1
CS11-1	10	1.467228	0.0027	0.281970	0.0051	0.059086	6.9
CS11-1	11	1.467149	0.0027	0.282097	0.0053	0.026393	3.2
CS11-1	12	1.467197	0.0028	0.281931	0.0044	0.050399	4.6
CS11-1	13	1.467277	0.0027	0.282136	0.0062	0.031307	4.4
CS11-1	14	1.467213	0.0036	0.282148	0.0044	0.044704	5.7
CS11-1	15	1.467122	0.0038	0.282075	0.0039	0.024185	3.7
CS11-1	16	1.467221	0.0037	0.282024	0.0050	0.144475	5.3
CS11-1	17	1.467201	0.0028	0.281939	0.0071	0.033279	5.1
CS11-1	18	1.467161	0.0037	0.282111	0.0046	0.025978	5.2
CS11-1	19	1.467188	0.0032	0.281976	0.0053	0.106651	3.7
CS11-1	21	1.467215	0.0031	0.282118	0.0051	0.032330	2.7
CS11-1	22	1.467269	0.0025	0.281962	0.0051	0.056068	2.6
CS11-1	23	1.467129	0.0032	0.282058	0.0057	0.043642	1.8
CS11-1	24	1.467187	0.0027	0.281964	0.0046	0.036535	3.9
CS11-1	25	1.467231	0.0036	0.282125	0.0053	0.026526	4.7
CS11-1	26	1.467161	0.0030	0.282144	0.0035	0.035368	7.7
CS11-1	27	1.467147	0.0033	0.282084	0.0046	0.020496	2.4
CS11-1	28	1.467243	0.0030	0.282178	0.0062	0.050935	10.6
CS11-1	29	1.467235	0.0033	0.282111	0.0064	0.019626	2.3
CS11-1	30	1.467169	0.0028	0.282084	0.0048	0.022521	2.4
CS11-1	31	1.467230	0.0031	0.282046	0.0059	0.034184	1.9
CS11-1	32	1.467155	0.0025	0.282112	0.0030	0.019892	4.2
CS11-1	33	1.467109	0.0031	0.281966	0.0041	0.081359	3.0
CS11-1	34	1.467223	0.0024	0.282200	0.0051	0.077932	7.8
CS11-1	37	1.467176	0.0036	0.281940	0.0066	0.036791	3.0
CS11-1	38	1.467191	0.0033	0.281938	0.0044	0.040631	3.5
CS11-1	39	1.467182	0.0031	0.282068	0.0035	0.025900	4.0
CS11-1	42	1.467177	0.0030	0.282033	0.0051	0.031747	4.7
CS11-1	44	1.467115	0.0025	0.282015	0.0048	0.025379	5.0
CS11-1	46	1.467116	0.0028	0.281991	0.0046	0.028963	11.3
CS11-1	47	1.467202	0.0041	0.282173	0.0058	0.037197	8.5
CS11-1	48	1.467243	0.0028	0.281947	0.0035	0.031754	2.8
CS11-1	51	1.467142	0.0035	0.282063	0.0058	0.022752	0.7
CS11-1	52	1.467074	0.0037	0.281926	0.0057	0.034011	2.8
CS11-1	54	1.467207	0.0031	0.282236	0.0043	0.026522	4.4
CS11-1	55	1.467232	0.0031	0.281994	0.0051	0.059482	9.8
CS11-1	56	1.467222	0.0033	0.282101	0.0050	0.027568	4.6
CS11-1	57	1.467169	0.0036	0.282061	0.0050	0.036197	11.9
CS11-1	58	1.467104	0.0037	0.282285	0.0066	0.082503	2.4
CS11-1	60	1.467209	0.0032	0.282163	0.0046	0.072300	5.9
CS11-1	62	1.467186	0.0034	0.282172	0.0053	0.027316	7.3
CS11-1	63	1.467172	0.0043	0.282114	0.0048	0.030345	5.0

CS11-3	1	1.467228	0.0031	0.282121	0.0048	0.031636	3.3
CS11-3	3	1.467158	0.0040	0.281957	0.0044	0.034931	5.7
CS11-3	4	1.467267	0.0033	0.282093	0.0035	0.025584	3.0
CS11-3	5	1.467236	0.0034	0.282075	0.0034	0.042873	3.2
CS11-3	6	1.467239	0.0034	0.282112	0.0041	0.048148	0.8
CS11-3	7	1.467169	0.0031	0.282202	0.0050	0.024452	2.3
CS11-3	8	1.467133	0.0035	0.281959	0.0060	0.044282	3.9
CS11-3	9	1.467203	0.0035	0.282217	0.0044	0.045990	4.0
CS11-3	10	1.467131	0.0027	0.282123	0.0076	0.037614	1.3
CS11-3	11	1.467266	0.0034	0.282108	0.0044	0.037759	14.1
CS11-3	16	1.467311	0.0035	0.282262	0.0050	0.070439	10.3
CS11-3	17	1.467226	0.0041	0.281913	0.0048	0.044017	3.2
CS11-3	18	1.467224	0.0039	0.282097	0.0064	0.047409	1.8
CS11-3	19	1.467291	0.0039	0.282001	0.0080	0.074261	0.7
CS11-3	20	1.467217	0.0033	0.282196	0.0080	0.046825	8.0
CS11-3	21	1.467210	0.0032	0.282090	0.0039	0.019774	2.0
CS11-3	22	1.467252	0.0035	0.282172	0.0062	0.047083	0.8
CS11-3	24	1.467304	0.0043	0.281986	0.0062	0.095996	1.1
CS11-3	25	1.467248	0.0040	0.281934	0.0062	0.073369	2.2
CS11-3	26	1.467233	0.0037	0.282088	0.0048	0.029253	8.6
CS11-3	27	1.467224	0.0028	0.282256	0.0053	0.028083	3.4
CS11-3	29	1.467231	0.0032	0.281981	0.0057	0.069393	0.7
CS11-3	30	1.467296	0.0030	0.282057	0.0051	0.092213	1.6
CS11-3	31	1.467218	0.0027	0.281893	0.0035	0.035670	11.0
CS11-3	32	1.467265	0.0034	0.282096	0.0048	0.025736	5.0
CS11-3	33	1.467273	0.0033	0.282294	0.0048	0.050506	4.3
CS11-3	34	1.467204	0.0028	0.282133	0.0048	0.044647	5.8
CS11-3	35	1.467280	0.0038	0.281890	0.0057	0.016795	4.7
CS11-3	36	1.467250	0.0031	0.282327	0.0053	0.157182	8.3
CS11-3	37	1.467315	0.0034	0.281943	0.0046	0.078981	1.1
CS11-3	39	1.467243	0.0028	0.281941	0.0030	0.041052	3.1
CS11-3	40	1.467266	0.0036	0.282129	0.0032	0.024806	9.6
CS11-3	41	1.467275	0.0030	0.282107	0.0051	0.020350	3.4
CS11-3	42	1.467255	0.0028	0.282071	0.0057	0.013392	1.0
CS11-3	43	1.467242	0.0030	0.282131	0.0046	0.034636	2.1
CS11-3	44	1.467233	0.0036	0.282291	0.0037	0.040474	2.6
CS11-3	45	1.467241	0.0028	0.282308	0.0048	0.102926	2.6
CS11-3	46	1.467202	0.0024	0.282086	0.0048	0.027737	10.8
CS11-3	47	1.467258	0.0026	0.282229	0.0055	0.052240	1.7
CS11-3	48	1.467232	0.0032	0.282144	0.0046	0.033895	4.3
CS11-3	49	1.467180	0.0031	0.282196	0.0050	0.050664	15.0
CS11-3	51	1.467192	0.0039	0.282288	0.0028	0.018867	2.3
CS11-3	52	1.467240	0.0034	0.281905	0.0044	0.012951	2.4
CS11-3	53	1.467197	0.0034	0.281909	0.0053	0.026786	4.6
CS11-3	55	1.467201	0.0032	0.281952	0.0039	0.014390	1.4
CS11-3	56	1.467275	0.0033	0.282116	0.0050	0.034621	17.2
CS11-3	57	1.467250	0.0037	0.282229	0.0062	0.110046	8.0
CS11-3	58	1.467192	0.0034	0.282131	0.0051	0.016617	2.0
CS11-3	72	1.467263	0.0041	0.282132	0.0053	0.053980	4.7
CS11-13	1	1.467141	0.0029	0.281808	0.0049	0.053845	9.4
CS11-13	2	1.467192	0.0029	0.281968	0.0041	0.036717	2.8
CS11-13	6	1.467167	0.0031	0.282054	0.0055	0.001130	4.2
CS11-13	9	1.467264	0.0032	0.282185	0.0045	0.029607	0.7
CS11-13	10	1.467173	0.0036	0.282182	0.0043	0.041809	0.5
CS11-13	11	1.467272	0.0035	0.281727	0.0054	0.054334	2.1
CS11-13	12	1.467163	0.0030	0.282020	0.0063	0.033055	2.0

CS11-13	14	1.467220	0.0036	0.281852	0.0052	0.061468	5.3
CS11-13	15	1.467209	0.0032	0.282101	0.0052	0.019399	1.0
CS11-13	16	1.467163	0.0032	0.281833	0.0055	0.050417	2.9
CS11-13	19	1.467192	0.0029	0.281856	0.0060	0.086778	2.9
CS11-13	26	1.467186	0.0032	0.281973	0.0051	0.008419	2.7
CS11-13	28	1.467191	0.0032	0.281791	0.0071	0.049021	2.4
CS11-13	29	1.467211	0.0029	0.281970	0.0046	0.024907	2.3
CS11-13	30	1.467248	0.0038	0.282189	0.0046	0.053925	4.1
CS11-13	31	1.467174	0.0032	0.281965	0.0046	0.031768	6.8
CS11-13	32	1.467103	0.0034	0.281635	0.0054	0.013256	4.7
CS11-13	33	1.467180	0.0042	0.281861	0.0063	0.040624	2.4
CS11-13	35	1.467259	0.0030	0.282194	0.0055	0.024999	3.0
CS11-13	36	1.467262	0.0033	0.282143	0.0049	0.025600	2.0
CS11-13	37	1.467171	0.0032	0.282121	0.0048	0.052815	3.2
CS11-13	38	1.467252	0.0029	0.281773	0.0046	0.028685	13.7
CS11-13	39	1.467193	0.0027	0.281783	0.0067	0.029248	5.5
CS11-13	41	1.467190	0.0031	0.282089	0.0048	0.073881	10.9
CS11-13	42	1.467202	0.0032	0.282032	0.0045	0.017499	2.3
CS11-13	43	1.467213	0.0035	0.281982	0.0054	0.040363	1.3
CS11-13	44	1.467223	0.0040	0.281901	0.0052	0.035841	2.6
CS11-13	45	1.467187	0.0035	0.281873	0.0058	0.139845	1.4
CS11-13	46	1.467184	0.0031	0.281687	0.0052	0.093349	5.5
CS11-13	47	1.467205	0.0033	0.281719	0.0048	0.029054	1.0
CS11-13	49	1.467216	0.0029	0.281961	0.0040	0.036565	2.4
CS11-13	51	1.467247	0.0027	0.281849	0.0057	0.041563	2.1
CS11-13	54	1.467192	0.0028	0.281976	0.0039	0.016912	6.0
CS11-13	55	1.467219	0.0033	0.282218	0.0048	0.050897	2.2
CS11-13	56	1.467207	0.0038	0.282068	0.0054	0.009862	4.1
CS11-13	57	1.467233	0.0033	0.282364	0.0067	0.093263	2.2
CS11-13	59	1.467143	0.0030	0.281782	0.0045	0.044381	6.3
CS11-13	62	1.467154	0.0038	0.281742	0.0061	0.031657	2.8
CS11-13	67	1.467194	0.0034	0.281745	0.0054	0.045411	3.3
CS11-13	69	1.467179	0.0032	0.282031	0.0048	0.035635	3.3
CS11-13	71	1.467218	0.0032	0.282181	0.0048	0.007860	3.4
CS11-13	72	1.467156	0.0032	0.281588	0.0058	0.031871	4.5
CS11-13	73	1.467204	0.0027	0.281124	0.0054	0.017936	1.9
CS11-13	74	1.467187	0.0033	0.282015	0.0056	0.010300	6.1
CS11-13	75	1.467139	0.0034	0.281842	0.0060	0.054618	4.6
CS11-13	77	1.467192	0.0034	0.282148	0.0060	0.041166	2.0
CS11-13	78	1.467269	0.0034	0.281795	0.0055	0.040348	3.6
CS11-13	79	1.467116	0.0029	0.282175	0.0044	0.036584	4.0
CS11-13	80	1.467143	0.0036	0.282049	0.0043	0.031420	3.6
CS11-13	82	1.467148	0.0030	0.281734	0.0051	0.024833	3.3
CS11-13	83	1.467221	0.0034	0.282043	0.0055	0.040356	2.5
CS11-13	84	1.467175	0.0027	0.281817	0.0041	0.020420	10.8
CS11-13	85	1.467231	0.0036	0.282143	0.0061	0.040879	2.4
CS11-13	14redo	1.467193	0.0034	0.281828	0.0046	0.044011	3.5
CS11-9	1	1.467198	0.0029	0.282228	0.0034	0.018476	3.1
CS11-9	2	1.467163	0.0026	0.282155	0.0037	0.034019	3.8
CS11-9	3	1.467300	0.0029	0.282129	0.0037	0.030379	3.9
CS11-9	4	1.467206	0.0029	0.282184	0.0041	0.029764	2.0
CS11-9	6	1.467226	0.0031	0.282158	0.0044	0.021396	3.3
CS11-9	8	1.467207	0.0029	0.282174	0.0039	0.019047	0.6
CS11-9	9	1.467239	0.0031	0.282176	0.0046	0.025787	3.2
CS11-9	10	1.467219	0.0029	0.282181	0.0041	0.031146	2.8
CS11-9	12	1.467226	0.0030	0.282162	0.0041	0.037892	2.6
CS11-9	13	1.467243	0.0026	0.282213	0.0046	0.036264	3.5

CS11-9	15	1.467272	0.0026	0.282136	0.0041	0.029897	2.4
CS11-9	16	1.467223	0.0035	0.282274	0.0035	0.057451	1.6
CS11-9	17	1.467190	0.0027	0.282188	0.0039	0.024448	4.3
CS11-9	18	1.467189	0.0030	0.282145	0.0048	0.024014	2.7
CS11-9	19	1.467202	0.0029	0.282203	0.0035	0.033902	3.6
CS11-9	20	1.467278	0.0030	0.282315	0.0048	0.077737	2.2
CS11-9	21	1.467253	0.0029	0.282165	0.0039	0.029982	1.7
CS11-9	22	1.467163	0.0029	0.282211	0.0060	0.033625	3.1
CS11-9	23	1.467177	0.0028	0.282203	0.0041	0.021066	4.9
CS11-9	24	1.467206	0.0029	0.282165	0.0044	0.052679	2.1
CS11-9	25	1.467158	0.0029	0.282126	0.0034	0.017482	5.4
CS11-9	27	1.467187	0.0026	0.282141	0.0034	0.029437	2.6
CS11-9	29	1.467189	0.0028	0.282186	0.0043	0.028588	4.6
CS11-9	31	1.467277	0.0026	0.282202	0.0050	0.026444	0.8
CS11-9	32	1.467176	0.0033	0.282156	0.0051	0.021691	1.8
CS11-9	34	1.467228	0.0027	0.282128	0.0050	0.029778	2.0
CS11-9	35	1.467234	0.0030	0.282162	0.0037	0.024408	6.5
CS11-9	36	1.467195	0.0028	0.282155	0.0035	0.011122	2.0
CS11-9	37	1.467219	0.0037	0.282171	0.0041	0.015459	2.1
CS11-9	38	1.467233	0.0029	0.282160	0.0041	0.026863	1.3
CS11-9	39	1.467296	0.0027	0.282167	0.0046	0.025223	3.8
CS11-9	40	1.467251	0.0026	0.282117	0.0028	0.035927	1.8
CS11-9	41	1.467292	0.0028	0.282137	0.0043	0.030030	0.8
CS11-9	44	1.467243	0.0032	0.282133	0.0039	0.024575	1.2
CS11-9	45	1.467254	0.0030	0.282132	0.0032	0.032695	7.5
CS11-9	46	1.467207	0.0030	0.282130	0.0046	0.020380	1.6
CS11-9	47	1.467214	0.0027	0.282131	0.0046	0.024152	1.4
CS11-9	50	1.467210	0.0027	0.282203	0.0037	0.028245	2.0
CS11-9	51	1.467193	0.0029	0.282206	0.0044	0.030066	6.4
CS11-9	52	1.467216	0.0027	0.282232	0.0043	0.016669	1.8
CS11-9	53	1.467259	0.0028	0.282229	0.0039	0.017256	1.3
CS11-9	58	1.467215	0.0028	0.281925	0.0037	0.039541	2.4
CS11-9	63	1.467197	0.0028	0.282208	0.0039	0.058375	1.8
CS11-9	69	1.467272	0.0025	0.282186	0.0044	0.031190	1.1
CS11-9	75	1.467189	0.0031	0.281936	0.0034	0.028339	2.6
CS11-9	85	1.467193	0.0029	0.282170	0.0048	0.036839	1.5
CS11-9	100	1.467193	0.0033	0.282197	0.0039	0.038440	1.7
CS11-9	105	1.467198	0.0026	0.282144	0.0039	0.018625	1.6
CS11-9	110	1.467184	0.0026	0.282070	0.0032	0.020803	1.9
CS11-9	112	1.467171	0.0034	0.282342	0.0046	0.175991	2.8

176Lu/177Hf	1s%	U-Pb Spot	Age	1s	disc	eHf	2s	2s+	Hf/Hf (t)
0.000785	2.1	Siam1_1	1989	12.3	-2.7	-11.3	1.2	1.9	0.281198
0.000754	7.1	Siam1_4	2153	10.7	-0.7	-7.8	1.2	2.1	0.281188
0.000276	3.9	Siam1_5	1909	34.6	-2.0	-10.0	1.4	3.1	0.281285
0.000464	2.0	Siam1_6	1926	5.6	-4.1	-0.6	1.1	1.5	0.281539
0.000036	2.0	Siam1_7	1877	4.3	-3.5	-2.1	1.1	1.4	0.281528
0.001084	3.0	Siam1_8	2155	12.0	-1.5	-6.9	1.5	2.3	0.281214
0.000720	5.3	Siam1_9	2138	20.9	1.0	-8.4	1.3	2.6	0.281181
0.000204	7.8	Siam1_10	1898	4.3	2.0	-1.7	1.0	1.3	0.281526
0.000593	2.4	Siam1_11	1997	11.5	1.4	6.2	1.2	1.9	0.281684
0.000064	2.5	Siam1_13	2619	14.4	1.1	-6.5	1.3	2.4	0.280920
0.000635	2.5	Siam1_18	2159	12.7	0.7	-13.0	1.2	2.0	0.281039
0.001627	2.5	Siam1_20	2142	4.4	0.4	-4.9	1.0	1.5	0.281278
0.001103	3.0	Siam1_14	1920	8.4	4.1	1.3	1.3	1.8	0.281597
0.000429	3.3	Siam1_22	2131	24.6	2.0	-9.9	1.8	3.2	0.281143
0.000278	2.8	Siam1_23	1855	4.1	1.6	-5.7	1.2	1.4	0.281442
0.001113	3.1	Siam1_24	2162	24.2	0.6	-10.4	1.5	3.0	0.281110
0.000650	2.8	Siam1_25	2147	12.2	-4.3	-6.5	1.5	2.4	0.281228
0.000460	3.3	Siam1_26	1979	5.7	6.0	4.3	1.2	1.6	0.281643
0.000882	3.3	Siam1_29	1896	7.9	-0.1	-6.7	1.0	1.5	0.281387
0.001163	2.3	Siam1_30	2840	3.1	-1.3	-1.7	1.1	2.0	0.280911
0.000741	2.2	Siam1_31	1879	13.0	-4.2	-0.2	1.7	2.4	0.281582
0.000136	4.8	Siam1_32	2553	7.1	-2.5	-9.5	1.3	2.1	0.280879
0.000769	6.1	Siam1_33	2129	18.7	-3.8	-5.8	1.2	2.4	0.281262
0.000085	2.4	Siam1_34	2467	17.7	-5.1	-12.4	1.4	2.6	0.280853
0.000589	3.8	Siam1_35	1917	8.9	-1.7	2.8	1.2	1.8	0.281642
0.000572	2.2	Siam1_36	2783	5.6	-1.5	1.3	1.3	2.2	0.281033
0.000445	7.6	Siam1_37	2718	3.3	1.0	-1.2	1.2	2.0	0.281004
0.000362	3.2	Siam1_38	1906	4.3	-0.5	-0.3	1.2	1.5	0.281562
0.000053	2.1	Siam1_39	2027	14.0	1.1	-16.6	1.2	2.0	0.281023
0.000492	2.1	Siam1_40	2117	32.4	-4.4	-10.8	1.2	2.9	0.281128
0.000334	2.6	Siam1_41	1892	5.8	-1.8	-7.0	1.2	1.5	0.281381
0.000077	2.5	Siam1_42	1851	4.7	-2.1	-3.0	1.2	1.5	0.281521
0.000142	3.5	Siam1_44	2713	2.7	-1.6	-5.5	1.2	1.9	0.280887
0.001007	2.2	Siam1_45	2146	7.8	-1.7	-4.7	1.6	2.2	0.281281
0.000386	3.3	Siam1_46	2139	16.5	-1.6	-6.1	1.2	2.3	0.281246
0.001555	4.1	Siam1_47	2656	12.0	43.8	2.1	1.1	2.4	0.281137
0.000711	2.2	Siam1_48	2131	8.1	-1.7	-8.2	1.2	1.8	0.281191
0.000301	2.7	Siam1_49	1969	9.8	-1.4	3.8	1.1	1.7	0.281634
0.000305	2.1	Siam1_50	1892	17.9	-1.6	0.1	1.7	2.6	0.281581
0.001069	2.5	Siam1_51	2072	15.9	8.5	2.6	1.2	2.2	0.281535
0.000511	2.1	Siam1_52	2773	8.5	-2.0	-2.3	1.1	2.1	0.280937
0.000659	2.8	Siam1_53	2163	14.5	-3.1	-12.6	1.3	2.2	0.281047
0.000360	2.1	Siam1_54	1899	8.5	-1.4	-4.2	1.2	1.7	0.281455
0.000783	2.2	Siam1_55	2298	5.7	-0.4	0.5	1.4	2.0	0.281328
0.000241	2.2	Siam1_56	2735	5.7	-0.1	-8.6	1.0	1.9	0.280785
0.000533	2.2	Siam1_57	2126	17.7	0.0	-10.7	1.2	2.3	0.281124
0.000709	2.1	Siam1_59	2740	3.1	0.1	-6.7	1.3	2.0	0.280835
0.000465	3.0	Siam1_72	2128	16.9	-1.8	-8.4	1.2	2.2	0.281187
0.001208	2.1	Siam1_73	1917	5.3	-0.5	-0.7	1.2	1.6	0.281544
0.000529	2.2	Siam1_74	1925	4.2	2.1	-8.8	1.3	1.6	0.281310
0.000950	2.8	Siam1_75	3218	4.5	1.1	1.1	1.2	2.4	0.280737
0.001346	2.1	Siam1_76	1917	7.8	-2.7	6.5	1.3	1.8	0.281746
0.000766	2.1	Siam1_77	1882	8.8	0.3	-11.2	1.0	1.5	0.281269
0.000753	2.3	Siam1_78	2149	10.8	-0.2	-8.6	1.2	1.9	0.281170
0.000219	2.2	Siam1_79	2724	5.0	-1.4	-3.7	1.0	1.8	0.280930
0.000817	2.5	Siam1_80	2143	14.4	-0.6	-3.8	0.9	1.9	0.281309

0.000833	2.2	Siam1_86	2744	5.0	-1.4	-11.0	1.3	2.1	0.280713
0.000394	2.9	Siam1_88	2132	16.7	-3.1	-12.4	1.2	2.2	0.281074
0.000543	2.2	Siam1_89	2143	11.9	-0.6	-8.9	1.1	1.9	0.281164
0.000973	3.2	Siam1_90	2141	10.9	0.4	-8.4	1.2	2.0	0.281179
0.000230	2.5	Siam1_91	2959	7.6	-1.1	-1.5	1.2	2.3	0.280838
0.000372	3.6	Siam1_92	2159	19.6	1.5	-3.7	1.0	2.1	0.281301
0.000792	2.5	Siam1_93	1903	6.7	-0.1	0.0	1.2	1.6	0.281572
0.000980	2.2	Siam1_94	2138	8.3	0.1	-4.6	1.0	1.7	0.281288
0.000738	2.3	Siam1_96	2150	5.7	2.6	-9.8	1.1	1.6	0.281135
0.000290	2.2	Siam1_97	2663	3.5	2.9	-5.9	1.3	2.0	0.280909
0.000722	2.2	Siam1_95	1904	14.9	0.4	0.0	1.1	1.9	0.281570
0.000474	2.6	Siam1_98	2776	2.3	-0.4	-3.6	1.1	1.9	0.280898
0.001236	4.3	Siam1_100	2144	7.5	1.6	-8.9	1.0	1.7	0.281163
0.000552	2.6	Siam1_101	2917	3.1	0.9	-0.4	1.2	2.1	0.280897
0.000241	2.5	Siam1_102	1874	3.4	1.1	-8.3	1.2	1.5	0.281357
0.000634	2.1	Siam1_111	1882	4.4	-1.0	-8.7	0.9	1.3	0.281340
0.001131	2.2	Siam1_112	2716	5.9	-0.5	-2.8	1.0	1.9	0.280959
0.000688	6.4	CS11-18_1	1096	14.6	5.8	-0.7	1.1	1.5	0.282071
0.000550	3.2	CS11-18_2	1762	8.6	0.5	2.0	1.0	1.5	0.281719
0.000492	3.9	CS11-18_3	1803	11.6	2.8	4.3	1.0	1.6	0.281756
0.000345	6.5	CS11-18_4	2684	5.0	1.6	-0.7	0.9	1.7	0.281041
0.001151	5.8	CS11-18_5	1792	8.9	1.8	1.5	1.3	1.9	0.281685
0.001727	4.3	CS11-18_7	1840	7.6	-1.5	1.5	1.1	1.7	0.281654
0.000696	3.5	CS11-18_8	1928	7.8	3.4	-15.5	0.9	1.4	0.281119
0.000812	4.9	CS11-18_9	1811	8.5	1.2	1.5	0.9	1.4	0.281672
0.000632	4.6	CS11-18_10	1829	6.1	0.5	2.8	0.8	1.2	0.281698
0.000831	12.1	CS11-18_11	1802	7.9	0.5	3.2	2.8	3.4	0.281728
0.000930	3.6	CS11-18_12	1807	6.4	-0.5	3.0	0.8	1.2	0.281717
0.000886	3.1	CS11-18_13	1809	5.8	-1.3	3.0	0.9	1.3	0.281716
0.001745	3.9	CS11-18_14	2720	5.8	1.5	0.4	1.4	2.5	0.281049
0.000549	4.2	CS11-18_15	2686	5.1	4.6	-0.8	1.3	2.2	0.281036
0.000613	3.0	CS11-18_16	1826	6.0	2.8	1.0	0.9	1.2	0.281648
0.000895	3.7	CS11-18_17	1792	8.3	0.8	1.8	1.0	1.5	0.281693
0.000930	3.2	CS11-18_18	1822	6.0	-1.9	0.8	1.0	1.4	0.281646
0.000446	3.1	CS11-18_19	1820	13.4	6.1	3.0	1.2	1.9	0.281709
0.001533	3.2	CS11-18_20	1811	6.5	-0.8	1.9	1.1	1.6	0.281685
0.001794	3.9	CS11-18_21	1822	5.8	0.0	1.5	0.9	1.4	0.281667
0.000423	5.6	CS11-18_22	1779	8.8	3.5	1.6	0.9	1.4	0.281698
0.001168	5.8	CS11-18_23	2700	5.8	1.1	-0.2	0.9	2.0	0.281044
0.000721	3.3	CS11-18_24	1820	5.7	2.1	-0.2	0.7	1.0	0.281618
0.000783	3.9	CS11-18_26	1805	5.9	1.9	1.9	1.1	1.5	0.281688
0.000664	4.5	CS11-18_27	2624	5.1	4.8	-1.5	1.1	1.9	0.281057
0.000726	3.1	CS11-18_29	1794	11.9	3.0	0.9	0.8	1.4	0.281666
0.000446	3.8	CS11-18_30	1794	10.5	4.2	3.9	1.4	1.9	0.281752
0.000921	3.2	CS11-18_32	1812	7.2	-0.4	0.2	1.1	1.5	0.281635
0.000009	11.5	CS11-18_33	1723	11.1	2.5	-0.3	0.8	1.3	0.281680
0.000479	5.0	CS11-18_35	1774	6.0	-0.8	-6.3	0.8	1.1	0.281478
0.000607	7.6	CS11-18_36	2645	5.2	0.6	-3.2	1.0	1.9	0.280997
0.000721	3.0	CS11-18_37	1755	4.9	-1.0	1.9	1.1	1.4	0.281720
0.000643	12.2	CS11-18_38	2707	5.4	2.6	-0.4	1.1	2.2	0.281034
0.001253	8.6	CS11-18_39	2693	6.2	0.2	0.8	1.2	2.4	0.281077
0.001889	3.4	CS11-18_40	1795	5.9	-2.3	0.9	1.1	1.6	0.281665
0.001064	6.3	CS11-18_41	2437	6.1	0.8	-1.4	1.2	2.1	0.281184
0.001598	3.5	CS11-18_42	1784	5.6	-2.1	3.0	1.0	1.4	0.281733
0.000657	4.7	CS11-18_43	1785	6.3	2.1	1.3	0.6	1.0	0.281683
0.000554	7.5	CS11-18_44	2634	7.4	0.0	-1.8	0.9	1.9	0.281043
0.001367	4.0	CS11-18_46	1808	5.0	4.6	1.9	0.8	1.2	0.281687

0.000684	3.1	CS11-18_47	2630	6.7	3.1	-3.2	0.8	1.7	0.281007
0.000432	3.9	CS11-18_48	2673	5.0	0.5	-2.9	0.9	1.7	0.280985
0.000518	4.9	CS11-18_49	2601	5.2	0.5	-2.6	0.8	1.6	0.281041
0.000501	3.0	CS11-18_50	2576	5.0	2.7	-3.5	0.8	1.5	0.281033
0.001637	6.0	CS11-18_53	2746	5.9	-1.2	-1.1	0.8	2.0	0.280990
0.000351	17.7	CS11-18_63	2706	7.0	4.9	-0.8	0.8	1.9	0.281022
0.000542	10.1	CS11-18_64	2698	5.7	0.1	0.4	1.1	2.1	0.281063
0.000460	3.0	CS11-18_65	2748	4.8	0.8	-0.1	0.8	1.7	0.281014
0.000467	3.6	CS11-18_66	2713	6.3	0.4	0.9	0.9	1.8	0.281066
0.002022	9.8	CS11-18_72	2955	7.0	3.3	1.7	0.9	2.7	0.280928
0.000683	3.1	CS11-19_1	1611	6.7	-1.7	-4.0	1.0	1.3	0.281647
0.001185	4.4	CS11-19_3	1650	11.1	1.2	-0.9	1.0	1.6	0.281709
0.000919	3.5	CS11-19_5	1663	18.2	4.0	1.4	1.4	2.2	0.281765
0.000942	3.1	CS11-19_6	1354	12.3	2.7	1.7	0.9	1.3	0.281975
0.000853	3.7	CS11-19_8	1113	12.3	1.9	4.0	1.1	1.3	0.282192
0.001072	4.4	CS11-19_9	1809	8.4	-1.4	-0.6	0.9	1.4	0.281614
0.000873	6.7	CS11-19_10	1353	8.8	1.0	-0.5	0.9	1.2	0.281914
0.001426	3.5	CS11-19_12	1712	12.1	0.6	-0.8	0.9	1.6	0.281674
0.000831	3.4	CS11-19_13	1457	11.4	1.8	4.8	0.8	1.2	0.281994
0.000781	3.1	CS11-19_14	1676	11.1	1.6	0.0	0.9	1.4	0.281717
0.001884	4.0	CS11-19_16	1659	12.7	2.5	0.3	0.9	1.5	0.281737
0.001061	10.0	CS11-19_18	1198	11.7	1.9	3.4	0.8	1.2	0.282121
0.001819	3.1	CS11-19_19	1387	7.8	-0.3	7.0	1.0	1.2	0.282102
0.001814	4.1	CS11-19_20	1661	11.7	-0.3	1.3	1.1	1.7	0.281764
0.000854	3.5	CS11-19_23	1442	9.7	-2.6	4.1	1.0	1.3	0.281986
0.001855	3.3	CS11-19_24	1860	7.0	-7.2	3.1	1.0	1.5	0.281687
0.000421	4.0	CS11-19_25	1923	13.5	-0.2	-8.3	0.6	1.3	0.281324
0.000874	3.6	CS11-19_26	1672	6.1	-2.4	1.1	0.9	1.2	0.281752
0.002638	3.2	CS11-19_27	1681	9.3	-2.8	4.7	1.5	2.1	0.281848
0.000566	3.3	CS11-19_28	1776	16.6	0.4	3.7	1.2	2.0	0.281757
0.000667	3.0	CS11-19_30	1623	13.5	-2.5	2.1	1.1	1.7	0.281811
0.000417	4.0	CS11-19_31	1755	8.2	-1.4	3.0	0.8	1.3	0.281752
0.000772	3.8	CS11-19_32	1678	6.2	-1.4	0.9	1.2	1.5	0.281744
0.000394	3.1	CS11-19_33	1490	12.3	4.3	4.0	0.9	1.3	0.281952
0.001339	3.4	CS11-19_35	1651	6.3	2.5	0.8	1.2	1.5	0.281757
0.001203	5.6	CS11-19_38	1656	6.8	1.9	-0.6	0.5	1.0	0.281715
0.000646	3.2	CS11-19_39	1333	15.0	0.9	0.6	1.0	1.5	0.281957
0.000723	9.6	CS11-19_40	1697	16.9	3.4	3.5	0.9	1.8	0.281803
0.000491	12.2	CS11-19_41	1771	7.9	0.9	1.5	0.8	1.3	0.281699
0.000757	5.5	CS11-19_42	1792	16.8	1.9	-16.2	0.8	1.7	0.281187
0.000856	3.5	CS11-19_43	1649	13.3	1.9	0.7	0.8	1.4	0.281756
0.000585	3.3	CS11-19_44	1702	7.8	0.8	1.5	0.7	1.1	0.281743
0.000931	3.6	CS11-19_45	1654	9.0	0.6	-0.8	0.8	1.3	0.281710
0.001598	5.1	CS11-19_46	1424	14.8	-3.4	7.9	0.8	1.4	0.282104
0.000969	4.1	CS11-19_47	1748	11.4	0.4	-0.4	0.8	1.4	0.281660
0.000419	4.9	CS11-19_48	1683	6.7	-0.6	1.1	1.0	1.3	0.281744
0.002352	3.4	CS11-19_49	1661	8.2	-1.0	0.3	0.9	1.4	0.281735
0.000860	4.1	CS11-19_50	2004	11.3	-0.6	0.7	0.8	1.6	0.281526
0.000276	3.2	CS11-19_51	2025	9.9	1.1	-6.7	0.8	1.4	0.281303
0.000346	3.1	CS11-19_52	2006	5.1	0.0	-0.8	0.8	1.2	0.281481
0.002789	3.9	CS11-19_54	1667	7.7	-3.7	2.9	1.2	1.8	0.281804
0.000625	8.7	CS11-19_55	1830	6.5	-6.6	3.2	0.7	1.2	0.281708
0.000572	3.2	CS11-19_57	1542	8.5	0.3	-4.0	0.9	1.2	0.281692
0.001682	3.9	CS11-19_58	1676	7.0	-5.1	3.7	0.8	1.2	0.281823
0.000695	9.0	CS11-19_60	1445	8.2	1.0	6.0	0.8	1.2	0.282036
0.000662	3.2	CS11-19_63	1570	9.9	4.4	6.7	1.1	1.5	0.281977
0.000771	3.2	CS11-19_61	1328	5.7	-2.5	0.1	0.9	0.9	0.281946

0.001314	4.4	CS11-19_71	1325	9.5	2.7	-1.5	0.8	1.1	0.281902
0.000493	3.1	CS11-19_74	1459	9.6	-1.9	3.4	1.0	1.3	0.281954
0.000684	3.9	CS11-19_76	1384	10.2	1.2	5.5	1.4	1.7	0.282061
0.001238	3.0	CS11-20_46	1374	27.4	8.7	1.1	1.0	2.1	0.281943
0.001237	3.0	CS11-20_46	1374	27.4	8.7	2.9	0.5	1.6	0.281995
0.001238	3.0	CS11-20_46	1374	27.4	8.7	0.6	0.9	2.0	0.281928
0.001238	3.0	CS11-20_46	1374	27.4	8.7	1.5	0.9	2.0	0.281956
0.001242	3.0	CS11-20_46	1374	27.4	8.7	1.8	0.9	2.0	0.281964
0.001247	3.0	CS11-20_46	1374	27.4	8.7	1.2	1.0	2.1	0.281947
0.001244	3.0	CS11-20_46	1374	27.4	8.7	1.0	0.7	1.8	0.281941
0.001284	3.0	CS11-20_46	1374	27.4	8.7	1.5	1.1	2.2	0.281954
0.001243	3.0	CS11-20_46	1374	27.4	8.7	1.6	1.2	2.2	0.281957
0.000578	3.0	CS11-20_3	1134	26.4	3.0	2.4	0.5	1.4	0.282133
0.001149	4.2	CS11-20_4	1975	17.6	2.5	5.3	0.8	1.9	0.281674
0.000414	3.6	CS11-20_7	1664	20.6	2.8	0.7	0.7	1.6	0.281746
0.001029	4.1	CS11-20_8	1683	18.7	3.4	1.7	0.7	1.6	0.281762
0.001150	3.3	CS11-20_9	1620	20.0	-4.3	2.3	0.7	1.6	0.281819
0.000643	4.0	CS11-20_12	1712	16.9	-0.5	0.3	0.6	1.4	0.281703
0.000781	3.7	CS11-20_13	2715	15.9	2.4	-0.1	0.5	1.9	0.281036
0.000534	7.5	CS11-20_15	1333	23.8	1.1	2.7	0.7	1.6	0.282016
0.002876	3.5	CS11-20_16	1672	19.3	0.3	1.4	1.0	2.0	0.281760
0.000652	5.0	CS11-20_17	1790	25.1	3.8	5.1	0.7	2.0	0.281787
0.000727	3.1	CS11-20_18	1759	18.4	-0.5	2.6	0.9	1.8	0.281739
0.000358	4.3	CS11-20_25	1136	57.5	-0.1	2.6	0.9	3.1	0.282139
0.001178	3.6	CS11-20_27	1255	21.3	4.9	3.1	0.6	1.4	0.282076
0.000300	3.2	CS11-20_28	2724	23.0	2.4	-1.3	0.6	2.3	0.280996
0.000556	3.3	CS11-20_29	1036	34.0	-2.2	0.8	0.8	1.9	0.282153
0.000511	3.2	CS11-20_31	2393	18.1	2.0	-12.7	1.0	2.2	0.280893
0.000518	6.3	CS11-20_33	1790	17.0	3.5	-0.9	0.8	1.7	0.281620
0.000430	3.0	CS11-20_34	1100	27.4	4.9	3.1	1.1	2.0	0.282177
0.000660	3.6	CS11-20_37	1793	16.6	0.7	2.5	0.6	1.5	0.281713
0.001393	3.0	CS11-20_39	1656	17.9	2.0	0.2	0.6	1.4	0.281738
0.000999	3.9	CS11-20_41	1695	12.2	0.2	0.3	0.6	1.2	0.281713
0.000431	3.8	CS11-20_42	1724	16.1	-1.9	3.3	0.5	1.2	0.281781
0.000551	3.4	CS11-20_43	1747	17.8	1.1	4.1	0.6	1.5	0.281787
0.000860	4.0	CS11-20_47	1118	26.3	2.5	5.4	0.8	1.7	0.282230
0.000769	5.1	CS11-20_49	1614	29.7	0.3	-0.5	1.1	2.5	0.281744
0.000441	3.0	CS11-20_51	1437	17.1	0.7	-9.7	1.0	1.6	0.281600
0.001941	6.4	CS11-20_52	1666	17.3	1.0	1.4	0.8	1.8	0.281765
0.000285	14.6	CS11-20_55	1505	14.4	1.9	2.4	0.6	1.2	0.281895
0.000413	5.6	CS11-20_56	1610	12.2	-2.1	3.5	0.6	1.1	0.281861
0.002332	5.5	CS11-20_57	1527	16.5	2.7	4.9	1.2	2.0	0.281953
0.000420	3.0	CS11-20_60	1803	17.7	0.2	1.5	0.9	1.8	0.281677
0.000694	3.1	CS11-20_63	1357	19.2	-0.5	-8.0	0.7	1.4	0.281698
0.000821	4.1	CS11-20_64	1643	12.3	-0.5	9.2	0.8	1.4	0.281998
0.003426	6.9	CS11-20_66	1756	13.4	0.2	2.3	0.7	1.9	0.281732
0.000763	5.1	CS11-20_72	1632	15.2	-2.0	-3.6	0.5	1.2	0.281646
0.001014	4.8	CS11-20_74	1702	19.1	-3.7	4.8	0.9	1.8	0.281837
0.000615	3.0	CS11-20_75	1807	18.7	2.2	6.7	0.7	1.6	0.281821
0.002041	5.3	CS11-5_3	1466	9.5	0.5	3.6	1.0	1.4	0.281956
0.000995	5.2	CS11-5_4	1827	9.1	-1.3	2.2	1.1	1.7	0.281683
0.000725	5.1	CS11-5_5	1948	8.9	3.6	-0.9	0.9	1.5	0.281517
0.001591	6.7	CS11-5_6	1497	9.5	-3.4	6.0	1.0	1.5	0.282003
0.000224	11.4	CS11-5_8	1151	11.4	1.1	-24.4	0.9	1.1	0.281368
0.000702	6.3	CS11-5_11	3026	8.0	3.8	2.5	1.9	3.2	0.280906
0.000780	5.2	CS11-5_12	1726	9.2	-2.0	2.0	1.1	1.6	0.281743

0.000580	7.3	CS11-5_14	2811	8.2	1.1	2.1	1.0	2.2	0.281034
0.000813	5.2	CS11-5_15	1201	9.9	2.1	5.2	1.2	1.4	0.282172
0.000585	5.5	CS11-5_16	1751	9.2	-0.8	-1.7	1.1	1.6	0.281621
0.002691	5.3	CS11-5_17	1491	9.5	-1.1	4.1	1.2	1.7	0.281953
0.000500	6.6	CS11-5_21	1607	9.3	-2.2	-6.1	1.1	1.5	0.281592
0.000745	5.4	CS11-5_22	1519	15.8	0.4	3.1	1.2	1.9	0.281908
0.000819	5.6	CS11-5_24	1786	9.1	-1.3	2.7	1.1	1.7	0.281723
0.000778	5.5	CS11-5_26	1153	59.2	-0.2	3.1	1.1	3.5	0.282141
0.000675	8.2	CS11-5_29	1512	9.7	-0.8	4.9	1.2	1.6	0.281963
0.001507	5.7	CS11-5_33	1965	8.9	0.0	-0.8	1.1	1.9	0.281507
0.000730	5.2	CS11-5_34	1584	32.8	2.3	-2.0	1.0	2.4	0.281720
0.000536	5.8	CS11-5_35	1449	21.1	1.2	1.4	1.1	1.9	0.281905
0.000742	7.2	CS11-5_36	1486	9.8	1.2	2.9	1.1	1.5	0.281923
0.000903	5.2	CS11-5_37	1322	9.7	-1.7	-1.3	0.9	1.1	0.281908
0.000794	7.9	CS11-5_39	1271	17.3	-0.4	2.2	1.1	1.7	0.282041
0.001023	5.8	CS11-5_40	1800	9.1	-2.1	1.0	1.4	2.0	0.281666
0.001732	6.3	CS11-5_41	1756	9.1	1.7	-0.7	0.9	1.6	0.281646
0.000444	6.5	CS11-5_42	1055	34.6	2.8	-8.3	0.8	2.0	0.281883
0.001068	5.1	CS11-5_43	1732	9.2	-0.7	2.1	1.0	1.5	0.281741
0.001121	5.3	CS11-5_45	1825	9.1	3.6	-2.3	1.2	1.8	0.281558
0.001084	5.3	CS11-5_46	1552	14.4	1.3	3.3	1.0	1.6	0.281890
0.000639	5.1	CS11-5_47	1990	8.9	0.7	-1.3	1.3	2.0	0.281478
0.001120	5.2	CS11-5_50	1801	3.7	1.2	-2.7	0.9	1.3	0.281560
0.000730	5.2	CS11-5_52	2716	2.3	0.2	-0.8	0.9	1.7	0.281018
0.001328	5.6	CS11-5_8	1151	11.4	1.1	-0.9	0.9	1.2	0.282031
0.001009	1.7	CS11-5_26	1153	59.2	-0.2	3.4	0.9	3.1	0.282152
0.001602	5.2	CS11-6_1	1435	9.5	-3.3	-2.7	1.1	1.5	0.281798
0.000618	5.5	CS11-6_3	1815	9.1	0.0	0.3	1.1	1.6	0.281636
0.000774	8.8	CS11-6_4	1502	12.2	-1.9	5.8	1.1	1.7	0.281995
0.001679	5.1	CS11-6_5	1387	9.6	4.4	7.1	1.0	1.4	0.282105
0.000049	7.7	CS11-6_7	1743	9.2	-1.0	2.2	1.0	1.4	0.281736
0.000186	6.9	CS11-6_8	2557	8.4	1.6	3.0	1.0	1.9	0.281228
0.001775	7.7	CS11-6_9	1305	9.7	1.8	5.8	0.9	1.3	0.282121
0.000576	5.1	CS11-6_10	1155	12.4	-4.5	-3.1	0.9	1.2	0.281966
0.000821	5.3	CS11-6_12	1724	12.3	1.7	3.7	1.4	2.0	0.281790
0.000644	5.2	CS11-6_13	1384	31.3	-1.1	-6.8	0.9	2.1	0.281715
0.000928	10.5	CS11-6_14	1283	13.4	0.0	2.3	1.0	1.5	0.282036
0.000608	5.2	CS11-6_16	1426	9.5	-2.4	-9.5	1.1	1.4	0.281612
0.000714	5.1	CS11-6_15	1143	15.0	-2.1	4.9	1.2	1.6	0.282199
0.002817	8.9	CS11-6_17	1298	11.1	4.5	5.0	1.0	1.7	0.282102
0.000446	5.1	CS11-6_20	2563	8.4	-1.1	2.6	1.0	2.0	0.281213
0.000480	5.2	CS11-6_22	1558	9.4	-1.0	1.0	1.0	1.4	0.281822
0.000420	5.5	CS11-6_24	1537	10.0	1.5	-0.8	1.1	1.5	0.281786
0.001127	5.6	CS11-6_25	1538	9.4	0.6	3.5	1.1	1.5	0.281905
0.001462	5.2	CS11-6_27	1770	9.1	3.8	4.2	1.0	1.6	0.281776
0.000823	5.3	CS11-6_28	1617	19.2	0.8	5.1	1.1	2.0	0.281899
0.000693	5.2	CS11-6_29	1395	11.8	-1.0	5.4	1.1	1.5	0.282050
0.000987	5.1	CS11-6_30	1653	9.3	-1.2	-0.2	0.9	1.4	0.281727
0.000528	8.2	CS11-6_31	1044	16.5	-1.8	-1.7	0.9	1.3	0.282078
0.000910	5.2	CS11-6_32	1710	9.2	0.6	1.2	0.9	1.4	0.281730
0.000725	5.3	CS11-6_34	1327	10.3	-1.1	-17.6	0.8	1.1	0.281448
0.000713	5.1	CS11-6_35	1441	9.5	-0.4	-6.5	0.9	1.2	0.281687
0.000557	5.2	CS11-6_37	1217	14.6	0.8	4.7	1.1	1.5	0.282146
0.000808	5.9	CS11-6_38	1849	9.0	2.5	1.6	0.9	1.5	0.281650
0.001089	5.1	CS11-6_39	1351	11.7	-0.1	6.2	1.0	1.4	0.282103
0.000772	5.1	CS11-6_40	1264	9.8	-1.1	2.4	1.0	1.2	0.282053
0.000988	7.7	CS11-6_41	1523	9.4	-0.3	6.9	1.1	1.6	0.282012

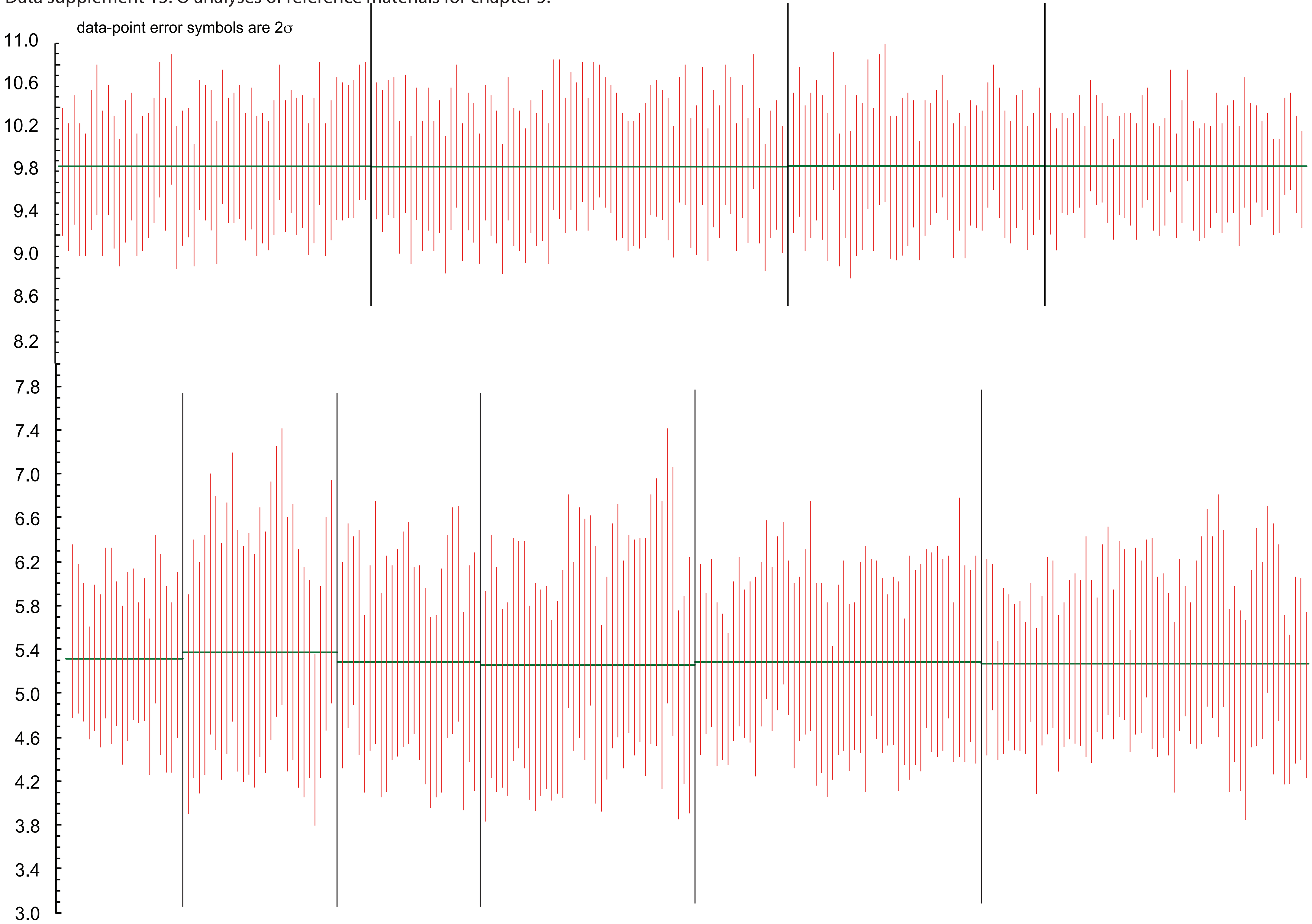
0.000584	5.3	CS11-6_42	1768	9.1	0.5	-0.1	1.0	1.5	0.281656
0.000866	5.2	CS11-6_45	1250	17.9	2.9	4.0	1.0	1.6	0.282105
0.000526	5.1	CS11-6_46	1978	10.5	-0.9	1.5	0.9	1.6	0.281565
0.000551	5.4	CS11-6_47	1239	11.0	-0.7	3.9	1.0	1.3	0.282111
0.000811	5.2	CS11-6_48	2944	8.1	-0.2	-1.3	1.1	2.3	0.280853
0.002737	5.1	CS11-6_50	1235	9.8	-1.4	4.6	1.2	1.5	0.282131
0.000625	5.2	CS11-6_51	1518	10.7	-1.9	6.3	1.0	1.4	0.281999
0.000544	2.1	CS11-6_16	1426	9.5	-2.4	-6.3	0.8	1.1	0.281701
0.001223	1.9	CS11-6_34	1327	10.3	-1.1	-17.3	1.1	1.4	0.281455
0.000481	1.5	CS11-6_34	1327	10.3	-1.1	-17.3	0.8	1.1	0.281457
0.000793	3.6	CS11-1_1	1079	8.3	-2.4	2.0	1.3	1.3	0.282159
0.000525	5.2	CS11-1_5	1006	27.3	-3.1	-2.3	0.9	1.8	0.282083
0.001279	3.1	CS11-1_6	1072	14.5	-1.5	0.2	1.0	1.3	0.282112
0.001047	3.0	CS11-1_8	1487	13.1	-1.5	1.7	0.9	1.4	0.281888
0.001398	9.9	CS11-1_9	1016	8.8	4.6	-2.2	0.9	1.1	0.282079
0.001153	4.9	CS11-1_10	1503	9.3	-1.0	3.8	1.0	1.4	0.281937
0.000502	3.5	CS11-1_11	994	15.2	2.2	-2.5	1.1	1.4	0.282087
0.000993	3.3	CS11-1_12	1494	6.6	-1.6	2.4	0.9	1.1	0.281903
0.000626	3.1	CS11-1_13	1015	23.6	-2.1	-0.7	1.2	1.9	0.282124
0.000888	7.1	CS11-1_14	1083	9.2	-1.1	1.1	0.9	1.0	0.282130
0.000456	3.2	CS11-1_15	1003	21.3	-1.7	-3.0	0.8	1.4	0.282066
0.002822	3.4	CS11-1_16	1651	10.6	3.7	7.1	1.0	1.6	0.281935
0.000685	3.3	CS11-1_17	1525	9.1	1.5	3.7	1.4	1.8	0.281919
0.000505	3.4	CS11-1_18	1061	17.2	5.6	-0.4	0.9	1.3	0.282101
0.002098	3.0	CS11-1_19	1490	6.7	-1.9	2.8	1.1	1.3	0.281917
0.000639	3.3	CS11-1_21	1070	27.2	0.3	-0.1	1.0	1.9	0.282105
0.001176	3.6	CS11-1_22	1494	7.4	-1.1	3.3	1.0	1.3	0.281929
0.000787	4.3	CS11-1_23	923	32.8	-5.0	-5.6	1.1	2.2	0.282044
0.000764	3.2	CS11-1_24	1495	9.9	-3.5	3.8	0.9	1.3	0.281942
0.000552	3.2	CS11-1_25	1082	19.5	3.2	0.5	1.1	1.6	0.282114
0.000718	4.8	CS11-1_26	1036	15.9	-2.2	0.0	0.7	1.1	0.282130
0.000411	3.4	CS11-1_27	994	10.3	2.1	-2.8	0.9	1.0	0.282076
0.000936	9.1	CS11-1_28	1241	6.7	-0.5	5.6	1.2	1.4	0.282156
0.000392	3.1	CS11-1_29	991	31.4	3.0	-1.9	1.3	2.3	0.282104
0.000440	3.3	CS11-1_30	955	15.6	-0.1	-3.7	1.0	1.2	0.282076
0.000660	4.7	CS11-1_31	1019	47.3	4.6	-3.8	1.2	2.9	0.282034
0.000388	3.0	CS11-1_32	1053	7.6	4.3	-0.5	0.6	0.6	0.282105
0.001535	3.1	CS11-1_33	1501	9.7	0.8	3.2	0.8	1.2	0.281923
0.001289	4.8	CS11-1_34	1263	5.9	0.8	6.6	1.0	1.1	0.282170
0.000760	3.0	CS11-1_37	1503	12.8	2.4	3.1	1.3	1.8	0.281919
0.000845	3.0	CS11-1_38	1502	7.7	2.4	3.0	0.9	1.2	0.281914
0.000536	3.0	CS11-1_39	991	10.1	1.8	-3.5	0.7	0.8	0.282058
0.000622	7.3	CS11-1_42	971	21.2	0.1	-5.3	1.0	1.6	0.282022
0.000536	3.0	CS11-1_44	956	15.0	-5.0	-6.2	1.0	1.2	0.282006
0.000625	8.1	CS11-1_46	986	15.6	-3.8	-6.4	0.9	1.3	0.281980
0.000751	12.0	CS11-1_47	1098	34.5	-2.4	2.4	1.2	2.5	0.282158
0.000694	3.2	CS11-1_48	1485	6.7	-2.8	3.1	0.7	0.9	0.281928
0.000469	4.5	CS11-1_51	919	28.8	-4.2	-5.3	1.2	2.0	0.282055
0.000728	3.1	CS11-1_52	1500	7.1	1.5	2.6	1.1	1.4	0.281906
0.000564	3.3	CS11-1_54	1053	19.3	0.3	3.8	0.9	1.4	0.282225
0.001274	6.0	CS11-1_55	1485	9.8	-1.5	4.1	1.0	1.5	0.281958
0.000661	3.7	CS11-1_56	1078	7.1	-2.4	-0.5	1.0	1.0	0.282088
0.000807	14.4	CS11-1_57	988	39.9	0.0	-4.1	1.0	2.5	0.282046
0.001744	3.4	CS11-1_58	1071	11.3	-1.3	5.1	1.3	1.5	0.282250
0.001510	4.0	CS11-1_60	1069	9.3	-3.1	0.9	0.9	1.1	0.282133
0.000665	5.1	CS11-1_62	1221	22.4	0.1	5.2	1.1	1.8	0.282157
0.000673	3.8	CS11-1_63	1063	10.0	-2.9	-0.4	1.0	1.1	0.282101

0.000686	3.3	CS11-3_1	985	18.5	3.2	-1.9	1.0	1.4	0.282108
0.000781	4.8	CS11-3_3	1498	10.1	-1.0	3.6	0.9	1.3	0.281935
0.000548	3.2	CS11-3_4	1245	11.0	0.9	3.0	0.7	1.0	0.282080
0.000903	3.3	CS11-3_5	983	26.3	0.2	-3.7	0.7	1.5	0.282058
0.000992	3.1	CS11-3_6	955	20.5	-0.3	-3.1	0.8	1.3	0.282094
0.000540	3.0	CS11-3_7	1077	12.0	-0.2	3.1	1.0	1.2	0.282191
0.001015	3.8	CS11-3_8	1506	7.5	0.5	3.6	1.2	1.5	0.281930
0.000960	3.8	CS11-3_9	1121	11.0	5.0	4.3	0.9	1.1	0.282197
0.000798	3.0	CS11-3_10	858	37.2	-10.4	-4.7	1.5	2.7	0.282110
0.000832	14.8	CS11-3_11	1105	16.2	4.4	0.2	0.9	1.4	0.282090
0.001446	9.0	CS11-3_16	1091	10.3	1.6	4.9	1.0	1.3	0.282232
0.001044	3.2	CS11-3_17	1639	12.0	2.9	4.9	1.0	1.5	0.281880
0.000985	3.0	CS11-3_18	960	19.6	1.5	-3.5	1.3	1.8	0.282079
0.001819	3.3	CS11-3_19	1661	9.5	2.6	7.7	1.6	2.1	0.281944
0.000860	7.0	CS11-3_20	1238	9.1	-2.1	6.2	1.6	1.8	0.282176
0.000436	3.1	CS11-3_21	958	23.0	-0.7	-3.5	0.8	1.4	0.282082
0.000986	3.1	CS11-3_22	988	37.1	2.6	-0.2	1.2	2.5	0.282154
0.002219	3.7	CS11-3_24	1669	6.0	1.8	6.9	1.2	1.7	0.281916
0.001690	3.2	CS11-3_25	1659	8.5	-0.2	5.4	1.2	1.7	0.281881
0.000628	7.1	CS11-3_26	996	13.6	2.1	-2.8	1.0	1.2	0.282076
0.000567	3.2	CS11-3_27	1118	11.3	3.8	5.9	1.1	1.3	0.282244
0.001615	3.7	CS11-3_29	1671	7.5	-0.4	7.4	1.1	1.6	0.281930
0.002342	3.0	CS11-3_.30	1526	7.3	1.8	6.2	1.0	1.4	0.281990
0.000797	8.8	CS11-3_31	1657	6.2	1.5	4.9	0.7	1.1	0.281868
0.000535	4.1	CS11-3_32	984	21.6	2.1	-2.7	1.0	1.5	0.282086
0.001046	3.8	CS11-3_33	1109	11.8	4.6	6.7	1.0	1.2	0.282272
0.000900	4.7	CS11-3_34	977	10.4	1.0	-1.8	1.0	1.1	0.282117
0.000402	4.1	CS11-3_35	1650	18.3	0.3	5.1	1.1	2.0	0.281878
0.002945	10.2	CS11-3_36	1145	11.8	3.2	7.2	1.1	1.7	0.282264
0.001769	3.1	CS11-3_37	1653	5.6	-1.7	5.5	0.9	1.2	0.281888
0.000899	3.2	CS11-3_39	1512	6.1	-2.4	3.3	0.6	0.8	0.281916
0.000519	7.4	CS11-3_40	936	24.5	-2.7	-2.6	0.6	1.3	0.282120
0.000435	3.4	CS11-3_41	946	15.7	1.2	-3.1	1.0	1.3	0.282100
0.000316	3.1	CS11-3_42	1010	12.7	4.0	-2.8	1.1	1.3	0.282065
0.000705	3.2	CS11-3_43	918	35.8	-1.6	-3.0	0.9	2.1	0.282119
0.000802	3.0	CS11-3_44	1121	12.4	2.9	7.0	0.7	1.0	0.282274
0.002133	5.3	CS11-3_45	1067	13.6	0.0	5.5	1.0	1.3	0.282265
0.000618	12.1	CS11-3_46	1073	18.1	2.0	-1.2	1.0	1.5	0.282073
0.001066	3.0	CS11-3_47	1095	26.8	-1.1	4.1	1.1	2.0	0.282207
0.000732	5.5	CS11-3_48	1046	41.1	0.1	0.2	0.9	2.4	0.282129
0.001113	12.1	CS11-3_49	1119	6.7	3.5	3.4	1.0	1.2	0.282172
0.000437	5.7	CS11-3_51	1114	9.5	1.8	7.1	0.6	0.7	0.282278
0.000337	3.6	CS11-3_52	1645	10.3	1.1	5.5	0.9	1.3	0.281894
0.000692	4.0	CS11-3_53	1656	15.6	1.2	5.5	1.1	1.8	0.281887
0.000403	3.4	CS11-3_55	1088	9.2	-0.9	-5.4	0.8	0.9	0.281943
0.000789	14.4	CS11-3_56	1258	15.0	0.6	3.9	1.0	1.6	0.282097
0.002277	10.7	CS11-3_57	1071	20.9	-1.5	2.7	1.2	2.1	0.282183
0.000408	3.6	CS11-3_58	1107	9.3	-1.6	1.4	1.0	1.1	0.282122
0.001142	3.8	CS11-3_72	929	29.8	-1.5	-3.0	1.1	2.0	0.282112
0.001144	7.6	CS11-13_1	1592	9.5	4.7	0.0	1.0	1.5	0.281773
0.000812	1.5	CS11-13_2	1050	8.8	4.5	-6.0	0.8	0.9	0.281951
0.000019	1.4	CS11-13_6	1048	12.5	0.8	-2.4	1.1	1.3	0.282053
0.000770	2.1	CS11-13_9	1074	14.4	-1.4	2.3	0.9	1.2	0.282170
0.000916	2.4	CS11-13_10	1164	16.5	1.8	4.1	0.9	1.3	0.282162
0.001258	4.5	CS11-13_11	1598	15.1	1.8	-2.8	1.1	1.8	0.281689
0.000679	1.9	CS11-13_12	1514	21.0	0.4	6.3	1.3	2.1	0.282001

0.001208	1.7	CS11-13_14	1651	5.0	-0.5	2.8	1.0	1.3	0.281815
0.000419	3.1	CS11-13_15	1009	70.2	1.0	-1.9	1.0	3.8	0.282093
0.001040	2.2	CS11-13_16	1060	19.2	4.4	-10.7	1.1	1.6	0.281813
0.001535	1.5	CS11-13_19	1655	3.5	2.3	2.7	1.2	1.4	0.281808
0.000187	1.4	CS11-13_26	1002	12.2	2.4	-6.4	1.0	1.2	0.281970
0.001058	1.8	CS11-13_28	1653	4.5	3.6	0.9	1.4	1.6	0.281758
0.000544	1.9	CS11-13_29	1454	8.9	0.5	3.3	0.9	1.2	0.281955
0.001107	2.0	CS11-13_30	1103	37.2	-0.4	2.8	0.9	2.2	0.282166
0.000675	3.9	CS11-13_31	1345	10.0	3.5	0.6	0.9	1.2	0.281948
0.000371	2.3	CS11-13_32	1737	5.3	0.6	-2.0	1.1	1.3	0.281623
0.000830	1.5	CS11-13_33	1404	30.5	1.5	-1.9	1.3	2.4	0.281839
0.000525	1.7	CS11-13_35	1102	13.8	1.1	3.4	1.1	1.4	0.282183
0.000567	1.6	CS11-13_36	1205	37.7	1.6	3.8	1.0	2.4	0.282130
0.001155	1.7	CS11-13_37	974	85.5	0.0	-2.5	1.0	4.3	0.282100
0.000664	15.0	CS11-13_38	1658	18.9	2.6	0.8	0.9	2.0	0.281752
0.000643	4.4	CS11-13_39	1620	9.8	2.3	0.3	1.3	1.8	0.281763
0.001489	8.2	CS11-13_41	1249	8.9	1.2	2.1	1.0	1.3	0.282054
0.000412	1.5	CS11-13_42	976	24.6	0.9	-5.1	0.9	1.6	0.282024
0.000856	2.1	CS11-13_43	1335	33.1	1.7	0.8	1.1	2.3	0.281960
0.000766	1.4	CS11-13_44	1481	7.5	-0.8	1.2	1.0	1.3	0.281879
0.002873	3.0	CS11-13_45	1649	6.0	0.2	1.7	1.2	1.6	0.281783
0.001961	2.3	CS11-13_46	1653	6.3	0.6	-3.8	1.0	1.4	0.281626
0.000679	2.3	CS11-13_47	1622	15.1	-3.1	-1.9	1.0	1.6	0.281698
0.000772	1.4	CS11-13_49	1316	13.8	2.6	-0.3	0.8	1.2	0.281942
0.000839	1.9	CS11-13_51	1645	34.8	4.1	3.0	1.1	2.7	0.281823
0.000323	3.3	CS11-13_54	1304	24.9	4.3	0.4	0.8	1.7	0.281968
0.001074	5.8	CS11-13_55	1048	20.2	3.2	2.7	1.0	1.6	0.282197
0.000235	1.5	CS11-13_56	1536	17.8	0.4	9.0	1.1	1.8	0.282061
0.001678	1.8	CS11-13_57	1114	13.6	1.2	8.8	1.3	1.6	0.282329
0.000946	3.5	CS11-13_59	1688	17.0	1.5	1.5	0.9	1.7	0.281752
0.000632	2.0	CS11-13_62	1660	10.1	-0.7	-0.2	1.2	1.7	0.281722
0.000931	1.6	CS11-13_67	1657	4.4	3.7	-0.5	1.1	1.3	0.281716
0.000729	1.5	CS11-13_69	1048	23.0	1.5	-3.7	1.0	1.6	0.282016
0.000192	1.5	CS11-13_71	1074	13.5	3.2	2.5	1.0	1.2	0.282177
0.000659	1.7	CS11-13_72	1764	7.4	1.4	-3.4	1.2	1.5	0.281566
0.000378	2.3	CS11-13_73	2667	2.5	4.9	1.2	1.1	1.7	0.281104
0.000218	2.3	CS11-13_74	1077	15.1	1.5	-3.3	1.1	1.5	0.282010
0.001097	1.9	CS11-13_75	1661	6.9	2.7	2.8	1.2	1.5	0.281808
0.000808	2.4	CS11-13_77	1350	17.4	-0.9	7.1	1.2	1.8	0.282128
0.000771	1.6	CS11-13_78	1618	19.8	3.7	0.6	1.1	1.9	0.281772
0.000660	1.5	CS11-13_79	1058	37.2	1.3	1.7	0.9	2.2	0.282162
0.000616	1.6	CS11-13_80	1432	10.7	4.1	5.6	0.9	1.2	0.282033
0.000503	1.6	CS11-13_82	1664	9.8	4.7	-0.3	1.0	1.4	0.281718
0.000725	3.2	CS11-13_83	1342	16.7	3.9	3.2	1.1	1.7	0.282025
0.000421	11.0	CS11-13_84	1024	9.6	3.3	-11.6	0.8	0.9	0.281809
0.000857	2.0	CS11-13_85	1332	32.4	2.5	6.4	1.2	2.5	0.282122
0.000948	1.5	CS11-13_14	1651	5.0	-0.5	2.3	0.9	1.1	0.281799
0.000373	2.8	CS11-9_1	1061	68.7	-1.9	3.8	0.7	3.4	0.282221
0.000688	3.3	CS11-9_2	1050	28.6	-1.9	0.7	0.7	1.7	0.282142
0.000637	3.2	CS11-9_3	1100	9.5	-3.0	1.0	0.7	0.9	0.282116
0.000611	3.1	CS11-9_4	1043	22.8	-1.6	1.7	0.8	1.5	0.282172
0.000434	2.9	CS11-9_6	1063	59.8	-0.8	1.3	0.9	3.2	0.282149
0.000395	3.0	CS11-9_8	1053	20.0	-1.1	1.7	0.8	1.3	0.282166
0.000572	3.0	CS11-9_9	1180	71.2	1.4	4.5	0.9	3.8	0.282163
0.000626	3.9	CS11-9_10	1052	44.4	-2.5	1.7	0.8	2.4	0.282169
0.000786	2.7	CS11-9_12	1042	65.0	-3.5	0.8	0.8	3.3	0.282147
0.000705	5.6	CS11-9_13	1045	26.1	-2.6	2.7	0.9	1.8	0.282199

0.000618	4.8	CS11-9_15	1067	51.8	-0.5	0.5	0.8	2.8	0.282124
0.001186	2.7	CS11-9_16	1079	19.6	-1.5	5.2	0.7	1.3	0.282250
0.000510	5.8	CS11-9_17	1072	69.9	-0.9	2.5	0.8	3.6	0.282178
0.000518	2.8	CS11-9_18	1061	47.4	-1.8	0.7	1.0	2.7	0.282134
0.000733	3.2	CS11-9_19	1093	45.0	-0.5	3.3	0.7	2.4	0.282188
0.001432	2.7	CS11-9_20	1128	13.5	-2.0	7.6	1.0	1.3	0.282284
0.000614	3.2	CS11-9_21	1050	53.2	-4.1	1.1	0.8	2.8	0.282152
0.000662	3.1	CS11-9_22	1066	45.1	-1.6	3.1	1.2	2.9	0.282197
0.000446	4.5	CS11-9_23	1070	80.6	-2.4	3.0	0.8	4.0	0.282194
0.001023	2.7	CS11-9_24	1071	18.4	-2.1	1.3	0.9	1.4	0.282145
0.000372	4.4	CS11-9_25	1052	53.3	-3.7	0.0	0.7	2.7	0.282119
0.000595	2.7	CS11-9_27	1067	29.8	-4.0	0.7	0.7	1.7	0.282129
0.000522	6.7	CS11-9_29	1068	25.8	-3.6	2.4	0.9	1.7	0.282176
0.000539	3.2	CS11-9_31	1057	53.2	-3.3	2.7	1.0	3.0	0.282192
0.000463	2.7	CS11-9_32	1067	52.5	-2.8	1.3	1.0	3.0	0.282147
0.000681	2.7	CS11-9_34	1095	36.1	3.8	0.8	1.0	2.3	0.282114
0.000495	8.4	CS11-9_35	1044	69.9	-0.8	1.0	0.7	3.5	0.282153
0.000236	3.1	CS11-9_36	1104	77.1	1.7	2.3	0.7	3.8	0.282150
0.000317	2.8	CS11-9_37	1079	44.6	1.3	2.2	0.8	2.5	0.282165
0.000550	2.8	CS11-9_38	1079	40.9	-0.3	1.7	0.8	2.3	0.282149
0.000496	3.1	CS11-9_39	1098	45.6	2.2	2.4	0.9	2.6	0.282157
0.000729	2.8	CS11-9_40	1067	18.2	-1.1	-0.3	0.6	1.0	0.282102
0.000612	2.8	CS11-9_41	1073	19.2	1.0	0.7	0.9	1.4	0.282125
0.000527	2.9	CS11-9_44	1058	28.2	-0.3	0.2	0.8	1.7	0.282122
0.000700	7.6	CS11-9_45	1061	12.3	2.2	0.1	0.6	0.9	0.282118
0.000431	2.7	CS11-9_46	1025	81.6	4.2	-0.5	0.9	4.2	0.282122
0.000510	3.4	CS11-9_47	1100	16.9	4.2	1.1	0.9	1.4	0.282120
0.000594	2.7	CS11-9_50	1093	24.3	2.7	3.5	0.7	1.5	0.282190
0.000622	7.0	CS11-9_51	1081	19.4	0.3	3.3	0.9	1.5	0.282194
0.000352	2.8	CS11-9_52	1158	76.1	4.0	6.1	0.9	3.9	0.282225
0.000369	2.8	CS11-9_53	1192	63.6	1.3	6.8	0.8	3.3	0.282221
0.000855	4.1	CS11-9_58	1437	14.8	4.3	1.0	0.7	1.3	0.281902
0.001157	3.4	CS11-9_63	1230	17.1	0.3	6.2	0.8	1.3	0.282181
0.000673	3.5	CS11-9_69	1173	47.6	1.1	4.6	0.9	2.7	0.282171
0.000634	2.7	CS11-9_75	1501	11.6	1.8	3.1	0.7	1.1	0.281918
0.000715	4.3	CS11-9_85	1095	82.2	-0.8	2.2	1.0	4.3	0.282155
0.000809	2.8	CS11-9_100	1110	50.9	-1.3	3.5	0.8	2.7	0.282180
0.000385	2.7	CS11-9_105	1026	31.5	-0.2	0.0	0.8	1.8	0.282136
0.000373	2.7	CS11-9_110	1049	85.8	4.8	-2.1	0.6	4.1	0.282062
0.002890	3.1	CS11-9_112	1172	11.0	2.3	8.3	0.9	1.2	0.282278

Data supplement 13: O analyses of reference materials for chapter 5.



Data supplement 14: Detrital zircon O data for chapter 5.

Spot	∂18O	±1s	Age	2s
Siam1_1	5.6	0.3	1988.6	12.3
Siam1_4	5.2	0.2	2153.0	10.7
Siam1_5	5.8	0.3	1909.1	34.6
Siam1_6	6.9	0.3	1926.1	5.6
Siam1_7	9.5	0.2	1876.8	4.3
Siam1_8	5.5	0.2	2154.8	12.0
Siam1_9	5.5	0.2	2137.6	20.9
Siam1_10	9.7	0.2	1897.5	4.3
Siam1_11	8.2	0.3	1997.0	11.5
Siam1_13	8.2	0.3	2619.2	14.4
Siam1_18	5.4	0.3	2159.5	12.7
Siam1_20	5.3	0.2	2142.5	4.4
Siam1_14	7.0	0.3	1920.1	8.4
Siam1_22	5.5	0.2	2131.3	24.6
Siam1_23	7.9	0.2	1854.8	4.1
Siam1_24	5.9	0.2	2161.6	24.2
Siam1_25	5.5	0.2	2147.4	12.2
Siam1_26	7.5	0.2	1979.2	5.7
Siam1_29	6.0	0.2	1895.6	7.9
Siam1_30	4.2	0.3	2839.8	3.1
Siam1_31	6.4	0.3	1879.1	13.0
Siam1_32	7.3	0.2	2552.6	7.1
Siam1_33	5.8	0.3	2128.8	18.7
Siam1_34	5.9	0.2	2467.0	17.7
Siam1_35	5.6	0.2	1916.9	8.9
Siam1_36	5.6	0.2	2782.8	5.6
Siam1_37	5.4	0.2	2718.4	3.3
Siam1_38	7.9	0.2	1906.2	4.3
Siam1_39	7.0	0.2	2026.6	14.0
Siam1_40	6.1	0.2	2116.5	32.4
Siam1_41	6.4	0.2	1892.0	5.8
Siam1_42	9.9	0.2	1850.5	4.7
Siam1_44	7.2	0.2	2712.7	2.7
Siam1_45	5.3	0.2	2146.5	7.8
Siam1_46	5.4	0.2	2139.5	16.5
Siam1_47	8.8	0.3	2655.8	12.0
Siam1_48	5.5	0.2	2131.5	8.1
Siam1_49	7.8	0.3	1969.1	9.8
Siam1_50	6.4	0.2	1891.6	17.9
Siam1_51	6.6	0.3	2072.4	15.9
Siam1_52	5.4	0.3	2772.8	8.5
Siam1_53	2.0	0.3	2162.6	14.5
Siam1_54	6.1	0.2	1899.0	8.5
Siam1_55	4.9	0.2	2297.8	5.7
Siam1_56	5.8	0.2	2735.3	5.7
Siam1_57	5.8	0.3	2125.8	17.7
Siam1_59	5.9	0.3	2739.9	3.1
Siam1_72	5.1	0.3	2128.2	16.9
Siam1_73	7.1	0.3	1917.0	5.3
Siam1_74	5.2	0.3	1925.1	4.2
Siam1_75	5.0	0.3	3217.6	4.5
Siam1_76	5.2	0.3	1916.9	7.8
Siam1_77	6.1	0.3	1881.9	8.8
Siam1_78	5.4	0.3	2149.4	10.8
Siam1_79	5.0	0.3	2723.6	5.0
Siam1_80	5.4	0.3	2143.0	14.4
Siam1_86	5.2	0.3	2744.0	5.0
Siam1_88	5.4	0.3	2131.7	16.7
Siam1_89	5.2	0.3	2142.9	11.9
Siam1_90	5.5	0.3	2141.0	10.9
Siam1_91	5.1	0.3	2958.9	7.6
Siam1_92	5.1	0.3	2158.8	19.6
Siam1_93	6.6	0.3	1902.5	6.7

Spot	∂18O	±1s	Age	2s
CS11-6_1	5.5	0.2	1434.6	9.5
CS11-6_3	6.5	0.2	1815.0	9.1
CS11-6_4	5.6	0.2	1501.9	12.2
CS11-6_5	7.0	0.2	1387.3	9.6
CS11-6_7	10.6	0.2	1743.2	9.2
CS11-6_8	5.6	0.2	2557.5	8.4
CS11-6_9	5.4	0.2	1305.2	9.7
CS11-6_10	7.1	0.2	1155.2	12.4
CS11-6_12	11.1	0.2	1724.0	12.3
CS11-6_13	8.2	0.2	1384.3	31.3
CS11-6_14	5.9	0.2	1283.0	13.4
CS11-6_16	6.2	0.2	1425.7	9.5
CS11-6_15	7.0	0.2	1143.4	15.0
CS11-6_17	8.9	0.2	1297.5	11.1
CS11-6_20	6.2	0.2	2562.6	8.4
CS11-6_22	6.2	0.2	1557.5	9.4
CS11-6_24	6.7	0.2	1536.8	10.0
CS11-6_25	6.8	0.2	1538.0	9.4
CS11-6_27	7.1	0.2	1770.1	9.1
CS11-6_28	5.4	0.3	1617.4	19.2
CS11-6_29	5.9	0.2	1395.5	11.8
CS11-6_30	7.0	0.3	1652.8	9.3
CS11-6_31	10.1	0.2	1043.6	16.5
CS11-6_32	6.2	0.2	1709.8	9.2
CS11-6_34	5.8	0.2	1327.2	10.3
CS11-6_35	5.8	0.2	1441.0	9.5
CS11-6_37	5.8	0.3	1217.0	14.6
CS11-6_38	6.7	0.3	1849.1	9.0
CS11-6_39	6.1	0.3	1350.6	11.7
CS11-6_40	7.2	0.2	1263.8	9.8
CS11-6_41	5.7	0.2	1523.1	9.4
CS11-6_42	7.5	0.2	1768.1	9.1
CS11-6_45	6.2	0.2	1250.3	17.9
CS11-6_46	10.3	0.2	1977.8	10.5
CS11-6_47	7.7	0.3	1238.9	11.0
CS11-6_48	5.2	0.3	2943.6	8.1
CS11-6_50	5.8	0.2	1235.1	9.8
CS11-6_51	5.6	0.2	1518.4	10.7
CS11-5_3	9.3	0.3	1465.9	9.5
CS11-5_4	5.9	0.2	1826.7	9.1
CS11-5_5	10.1	0.3	1947.7	8.9
CS11-5_6	5.9	0.3	1497.2	9.5
CS11-5_8	10.9	0.2	1151.0	11.4
CS11-5_11	5.3	0.2	3025.6	8.0
CS11-5_12	7.9	0.2	1726.3	9.2
CS11-5_14	5.2	0.2	2811.2	8.2
CS11-5_15	6.0	0.3	1200.6	9.9
CS11-5_16	8.0	0.2	1751.5	9.2
CS11-5_17	5.0	0.2	1491.4	9.5
CS11-5_21	9.1	0.2	1606.9	9.3
CS11-5_22	7.3	0.3	1518.8	15.8
CS11-5_24	5.8	0.3	1786.4	9.1
CS11-5_26	6.2	0.3	1152.8	59.2
CS11-5_29	5.7	0.3	1512.4	9.7
CS11-5_33	10.0	0.3	1964.9	8.9
CS11-5_34	7.1	0.2	1584.0	32.8
CS11-5_35	6.6	0.3	1449.2	21.1
CS11-5_36	7.5	0.3	1485.8	9.8
CS11-5_37	5.2	0.3	1321.9	9.7
CS11-5_39	7.0	0.3	1271.0	17.3
CS11-5_40	5.3	0.2	1799.6	9.1
CS11-5_41	6.0	0.3	1756.1	9.1
CS11-5_42	8.1	0.2	1054.6	34.6

Spot	∂18O	±1s	Age	2s
CS11-1_1	5.8	0.8	1078.9	8.3
CS11-1_5	7.9	0.8	1006.5	27.3
CS11-1_6	6.1	0.6	1071.7	14.5
CS11-1_8	8.0	0.8	1487.3	13.1
CS11-1_9	5.6	0.5	1016.2	8.8
CS11-1_10	6.9	0.8	1503.3	9.3
CS11-1_11	6.6	0.7	993.8	15.2
CS11-1_12	7.3	0.8	1493.6	6.6
CS11-1_13	5.8	0.6	1015.5	23.6
CS11-1_14	6.2	0.6	1082.7	9.2
CS11-1_15	6.2	0.7	1002.7	21.3
CS11-1_16	6.0	0.6	1651.3	10.6
CS11-1_17	9.4	1.0	1524.6	9.1
CS11-1_18	7.8	1.0	1061.2	17.2
CS11-1_19	5.9	0.7	1489.7	6.7
CS11-1_21	6.8	0.7	1069.8	27.2
CS11-1_22	7.4	0.9	1494.0	7.4
CS11-1_23	6.5	0.6	923.3	32.8
CS11-1_24	6.5	0.7	1495.1	9.9
CS11-1_25	5.6	0.5	1081.7	19.5
CS11-1_26	6.7	0.8	1035.7	15.9
CS11-1_27	6.1	0.5	993.9	10.3
CS11-1_28	6.6	0.9	1241.3	6.7
CS11-1_29	6.5	0.9	991.1	31.4
CS11-1_30	6.4	0.7	955.1	15.6
CS11-1_31	7.0	0.6	1018.8	47.3
CS11-1_32	7.1	0.7	1053.1	7.6
CS11-1_33	5.7	0.6	1500.7	9.7
CS11-1_34	5.5	0.5	1262.9	5.9
CS11-1_37	7.0	0.6	1502.9	12.8
CS11-1_38	6.4	0.7	1502.0	7.7
CS11-1_39	6.3	0.6	991.5	10.1
CS11-1_42	7.6	0.8	970.9	21.2
CS11-1_44	5.2	0.4	955.5	15.0
CS11-1_46	6.4	0.7	985.6	15.6
CS11-1_47	6.8	0.8	1098.3	34.5
CS11-1_48	7.6	0.9	1485.5	6.7
CS11-1_51	6.8	0.5	918.7	28.8
CS11-1_52	6.8	0.8	1499.5	7.1
CS11-1_54	5.9	0.6	1052.9	19.3
CS11-1_55	7.2	0.7	1484.9	9.8
CS11-1_56	6.5	0.8	1078.3	7.1
CS11-1_57	8.5	1.1	987.7	39.9
CS11-1_58	7.0	0.7	1070.9	11.3
CS11-1_60	6.6	0.9	1068.8	9.3
CS11-1_62	6.5	0.5	1220.6	22.4
CS11-1_63	6.2	0.5	1063.3	10.0
CS11-1_71	8.4	1.1	975.9	77.0
CS11-1_76	7.4	0.7	951.2	52.3
CS11-3_1	5.9	0.4	985.0	18.5
CS11-3_3	6.1	0.3	1498.3	10.1
CS11-3_4	6.2	0.4	1245.0	11.0
CS11-3_5	6.2	0.5	982.6	26.3
CS11-3_6	5.8	0.5	954.8	20.5
CS11-3_7	6.1	0.6	1077.2	12.0
CS11-3_8	6.0	0.4	1505.8	7.5
CS11-3_9	5.8	0.5	1120.6	11.0
CS11-3_10	6.0	0.5	858.1	37.2
CS11-3_11	6.2	0.4	1105.4	16.2
CS11-3_16	5.7	0.5	1090.7	10.3
CS11-3_17	5.3	0.4	1639.3	12.0
CS11-3_18	5.3	0.6	959.7	19.6

Siam1_94	5.2	0.3	2137.9	8.3
Siam1_96	5.3	0.3	2149.7	5.7
Siam1_97	5.1	0.3	2663.1	3.5
Siam1_95	5.7	0.3	1903.7	14.9
Siam1_98	4.6	0.3	2776.3	2.3
Siam1_100	5.0	0.3	2144.2	7.5
Siam1_101	4.7	0.3	2916.7	3.1
Siam1_102	6.0	0.3	1873.5	3.4
Siam1_111	5.6	0.3	1881.8	4.4
Siam1_112	4.7	0.3	2715.9	5.9
Siam1_114	5.9	0.3	2742.0	6.8
Siam1_116	5.7	0.3	2720.7	5.9
CS11-18_1	6.8	0.8	1096.0	14.6
CS11-18_2	6.7	0.5	1762.2	8.6
CS11-18_3	5.6	0.5	1803.3	11.6
CS11-18_4	5.0	0.5	2683.7	5.0
CS11-18_5	5.7	0.5	1792.2	8.9
CS11-18_7	4.7	0.4	1839.9	7.6
CS11-18_8	10.3	1.0	1927.7	7.8
CS11-18_9	5.2	0.5	1810.6	8.5
CS11-18_10	6.3	0.8	1828.5	6.1
CS11-18_11	6.7	0.5	1802.5	7.9
CS11-18_12	7.4	0.7	1806.6	6.4
CS11-18_13	7.0	0.5	1808.5	5.8
CS11-18_14	4.1	0.3	2719.6	5.8
CS11-18_15	4.2	0.4	2686.0	5.1
CS11-18_16	4.8	0.4	1826.2	6.0
CS11-18_17	4.7	0.4	1791.8	8.3
CS11-18_18	5.2	0.6	1821.8	6.0
CS11-18_19	5.5	0.5	1819.8	13.4
CS11-18_20	6.1	0.6	1811.2	6.5
CS11-18_21	4.9	0.5	1822.2	5.8
CS11-18_22	6.4	0.7	1778.7	8.8
CS11-18_23	3.9	0.4	2699.9	5.8
CS11-18_24	5.6	0.5	1819.8	5.7
CS11-18_26	5.4	0.4	1805.3	5.9
CS11-18_27	2.4	0.2	2624.0	5.1
CS11-18_29	4.8	0.4	1794.3	11.9
CS11-18_30	5.1	0.5	1794.3	10.5
CS11-18_32	12.4	1.1	1811.8	7.2
CS11-18_33	7.3	0.7	1722.8	11.1
CS11-18_35	5.7	0.7	1773.6	6.0
CS11-18_36	6.3	0.5	2645.4	5.2
CS11-18_37	2.9	0.3	1754.6	4.9
CS11-18_38	8.4	0.9	2707.3	5.4
CS11-18_39	5.2	0.4	2693.2	6.2
CS11-18_40	4.3	0.4	1795.1	5.9
CS11-18_41	3.1	0.2	2437.0	6.1
CS11-18_42	4.0	0.4	1783.6	5.6
CS11-18_43	4.3	0.4	1784.7	6.3
CS11-18_44	2.7	0.2	2633.8	7.4
CS11-18_46	5.2	0.4	1808.4	5.0
CS11-18_47	5.0	0.5	2629.5	6.7
CS11-18_48	4.7	0.6	2672.7	5.0
CS11-18_49	5.0	0.5	2600.7	5.2
CS11-18_50	4.8	0.5	2576.3	5.0
CS11-18_53	5.3	0.5	2746.4	5.9
CS11-19_1	5.7	0.4	1611.0	6.7
CS11-19_3	8.9	0.6	1649.9	11.1
CS11-19_5	3.0	0.2	1663.4	18.2
CS11-19_6	3.8	0.3	1353.8	12.3
CS11-19_9	8.6	0.8	1808.8	8.4

CS11-5_43	6.3	0.2	1732.4	9.2
CS11-5_45	9.1	0.2	1825.3	9.1
CS11-5_46	6.6	0.2	1552.4	14.4
CS11-5_47	6.6	0.3	1989.5	8.9
CS11-5_50	8.7	0.2	1801.4	3.7
CS11-5_52	6.3	0.2	2716.4	2.3
CS11-20_54	8.9	0.7	1793.1	17.0
CS11-20_69	3.7	0.3	1771.8	16.1
CS11-20_65	4.1	0.3	1743.0	15.3
CS11-20_32	7.7	0.6	1602.7	17.1
CS11-20_14	5.2	0.3	1845.1	15.9
CS11-20_26	8.2	0.6	1634.2	15.0
CS11-20_35	7.4	0.6	1980.5	33.3
CS11-20_67	5.9	0.5	1180.1	18.5
CS11-20_45	6.2	0.5	1781.3	16.6
CS11-20_58	4.8	0.4	1824.6	14.5
CS11-20_24	3.7	0.3	1280.4	18.9
CS11-20_5	6.8	0.5	1321.9	20.3
CS11-20_2	6.2	0.4	1302.3	21.8
CS11-20_20	4.9	0.4	1373.2	19.1
CS11-20_53	6.8	0.5	1200.1	20.7
CS11-20_38	5.2	0.4	1098.5	18.3
CS11-20_6	5.0	0.4	1088.9	23.2
CS11-20_21	2.8	0.2	2540.8	15.3
CS11-20_46	5.5	0.4	1374.1	27.4
CS11-20_48	3.7	0.3	1786.0	12.8
CS11-20_59	5.1	0.4	1393.5	20.7
CS11-20_10	4.3	0.3	1185.9	32.4
CS11-20_19	6.5	0.4	1557.6	19.6
CS11-20_11	5.5	0.4	1757.2	17.2
CS11-20_22	8.6	0.6	1658.6	19.3
CS11-20_30	7.2	0.5	1140.8	19.4
CS11-20_40	5.9	0.4	1498.3	16.8
CS11-20_36	4.7	0.4	1403.2	21.7
CS11-20_1	6.5	0.4	1340.4	22.0
CS11-20_50	2.3	0.2	1182.2	18.6
CS11-20_44	4.9	0.4	1681.1	17.5
CS11-20_27	4.8	0.4	1254.5	21.3
CS11-20_34	4.7	0.3	1099.5	27.4
CS11-20_17	4.8	0.3	1790.3	25.1
CS11-20_33	7.2	0.6	1790.4	17.0
CS11-20_8	6.5	0.4	1683.4	18.7
CS11-20_3	6.5	0.4	1134.3	26.4
CS11-20_7	6.9	0.5	1664.5	20.6
CS11-20_57	4.1	0.3	1527.0	16.5
CS11-20_47	4.0	0.3	1118.3	26.3
CS11-20_4	6.0	0.5	1975.3	17.6
CS11-20_13	4.1	0.3	2715.2	15.9
CS11-20_28	4.9	0.3	2724.5	23.0
CS11-20_39	8.5	0.6	1655.9	17.9
CS11-20_31	5.0	0.3	2392.7	18.1
CS11-20_55	2.3	0.2	1505.2	14.4
CS11-20_15	5.8	0.4	1333.3	23.8
CS11-20_43	6.4	0.6	1747.1	17.8
CS11-20_52	3.4	0.3	1666.2	17.3
CS11-20_68	4.7	0.3	1758.0	16.5
CS11-20_37	4.2	0.3	1793.5	16.6
CS11-20_51	4.6	0.4	1436.5	17.1
CS11-20_49	5.8	0.4	1614.5	29.7
CS11-20_16	5.6	0.4	1671.9	19.3
CS11-20_60	4.9	0.4	1803.2	17.7
CS11-20_41	5.8	0.5	1695.5	12.2
CS11-20_66	4.0	0.3	1755.9	13.4
CS11-20_25	6.1	0.4	1136.1	57.5

CS11-3_19	5.2	0.4	1660.9	9.5
CS11-3_20	5.8	0.5	1238.5	9.1
CS11-3_21	6.3	0.4	957.6	23.0
CS11-3_22	5.1	0.4	987.5	37.1
CS11-3_24	5.3	0.4	1669.2	6.0
CS11-3_25	5.5	0.3	1659.5	8.5
CS11-3_26	6.5	0.5	995.8	13.6
CS11-3_27	5.7	0.4	1117.9	11.3
CS11-3_29	5.1	0.3	1670.9	7.5
CS11-3_30	5.3	0.3	1525.6	7.3
CS11-3_31	5.6	0.4	1657.0	6.2
CS11-3_32	6.7	0.5	983.6	21.6
CS11-3_33	5.7	0.4	1108.8	11.8
CS11-3_34	5.8	0.5	977.5	10.4
CS11-3_35	6.0	0.4	1649.6	18.3
CS11-3_36	4.9	0.4	1145.0	11.8
CS11-3_37	4.8	0.3	1653.0	5.6
CS11-3_39	6.4	0.5	1512.0	6.1
CS11-3_40	6.3	0.4	935.8	24.5
CS11-3_41	6.9	0.4	946.2	15.7
CS11-3_42	5.5	0.3	1010.4	12.7
CS11-3_43	6.4	0.5	918.0	35.8
CS11-3_44	6.1	0.5	1120.8	12.4
CS11-3_45	5.6	0.6	1067.4	13.6
CS11-3_46	5.8	0.6	1073.2	18.1
CS11-3_47	5.5	0.6	1094.7	26.8
CS11-3_48	5.1	0.5	1045.9	41.1
CS11-3_49	5.5	0.6	1119.0	6.7
CS11-3_51	4.7	0.5	1114.3	9.5
CS11-3_52	4.4	0.5	1645.0	10.3
CS11-3_53	4.6	0.5	1656.1	15.6
CS11-3_54	5.1	0.5	1491.7	22.8
CS11-3_55	4.6	0.5	1088.4	9.2
CS11-3_56	5.0	0.5	1257.6	15.0
CS11-3_57	5.3	0.5	1071.3	20.9
CS11-3_58	5.4	0.6	1107.1	9.3
CS11-3_72	4.6	0.5	929.4	29.8
CS11-9_1	5.8	0.3	1060.8	68.7
CS11-9_2	6.4	0.3	1050.1	28.6
CS11-9_3	5.8	0.2	1099.6	9.5
CS11-9_4	7.3	0.2	1043.0	22.8
CS11-9_6	6.6	0.2	1062.8	59.8
CS11-9_7	7.1	0.3	1074.0	139.9
CS11-9_8	7.1	0.2	1053.0	20.0
CS11-9_9	6.4	0.2	1180.4	71.2
CS11-9_10	6.4	0.2	1051.9	44.4
CS11-9_11	7.1	0.2	1091.6	104.3
CS11-9_12	7.1	0.2	1042.5	65.0
CS11-9_13	6.5	0.2	1044.9	26.1
CS11-9_15	6.4	0.3	1066.9	51.8
CS11-9_16	6.1	0.3	1079.2	19.6
CS11-9_17	7.2	0.2	1072.2	69.9
CS11-9_18	6.9	0.2	1061.0	47.4
CS11-9_19	6.6	0.2	1092.9	45.0
CS11-9_20	5.2	0.2	1127.7	13.5
CS11-9_21	7.1	0.2	1050.4	53.2
CS11-9_22	7.2	0.2	1066.3	45.1
CS11-9_23	6.1	0.3	1069.9	80.6
CS11-9_24	7.0	0.2	1070.8	18.4
CS11-9_25	6.5	0.3	1052.4	53.3
CS11-9_27	7.0	0.2	1066.6	29.8
CS11-9_28	6.6	0.2	1027.0	121.2
CS11-9_29	5.9	0.2	1068.2	25.8

CS11-19_10	4.9	0.4	1352.5	8.8
CS11-19_12	3.4	0.3	1711.9	12.1
CS11-19_13	4.6	0.4	1456.7	11.4
CS11-19_14	5.5	0.4	1676.1	11.1
CS11-19_16	8.0	0.6	1659.4	12.7
CS11-19_18	9.4	0.7	1198.1	11.7
CS11-19_19	4.9	0.6	1387.2	7.8
CS11-19_20	4.5	0.3	1661.1	11.7
CS11-19_23	5.8	0.5	1441.6	9.7
CS11-19_24	5.6	0.4	1859.8	7.0
CS11-19_25	4.9	0.4	1923.5	13.5
CS11-19_26	4.5	0.3	1672.3	6.1
CS11-19_27	4.4	0.4	1680.5	9.3
CS11-19_28	6.3	0.6	1776.1	16.6
CS11-19_30	5.9	0.4	1622.9	13.5
CS11-19_31	5.6	0.4	1754.7	8.2
CS11-19_32	4.4	0.3	1677.7	6.2
CS11-19_33	6.0	0.5	1489.8	12.3
CS11-19_35	6.2	0.5	1651.1	6.3
CS11-19_38	8.8	0.7	1655.9	6.8
CS11-19_39	6.2	0.5	1332.9	15.0
CS11-19_40	4.7	0.3	1696.7	16.9
CS11-19_41	4.3	0.3	1770.9	7.9
CS11-19_42	9.8	0.9	1791.7	16.8
CS11-19_43	8.2	0.7	1648.8	13.3
CS11-19_44	4.9	0.5	1702.2	7.8
CS11-19_45	9.0	0.6	1653.8	9.0
CS11-19_46	7.1	0.6	1423.9	14.8
CS11-19_47	6.3	0.5	1748.4	11.4
CS11-19_48	5.3	0.4	1682.6	6.7
CS11-19_49	8.8	0.6	1660.9	8.2
CS11-19_50	4.7	0.4	2003.7	11.3
CS11-19_51	7.9	0.6	2024.9	9.9
CS11-19_52	7.1	0.6	2006.4	5.1
CS11-19_54	5.1	0.4	1667.5	7.7
CS11-19_55	5.1	0.4	1830.3	6.5
CS11-19_57	6.8	0.7	1542.5	8.5
CS11-19_58	4.2	0.4	1675.8	7.0
CS11-19_60	6.6	0.5	1444.6	8.2

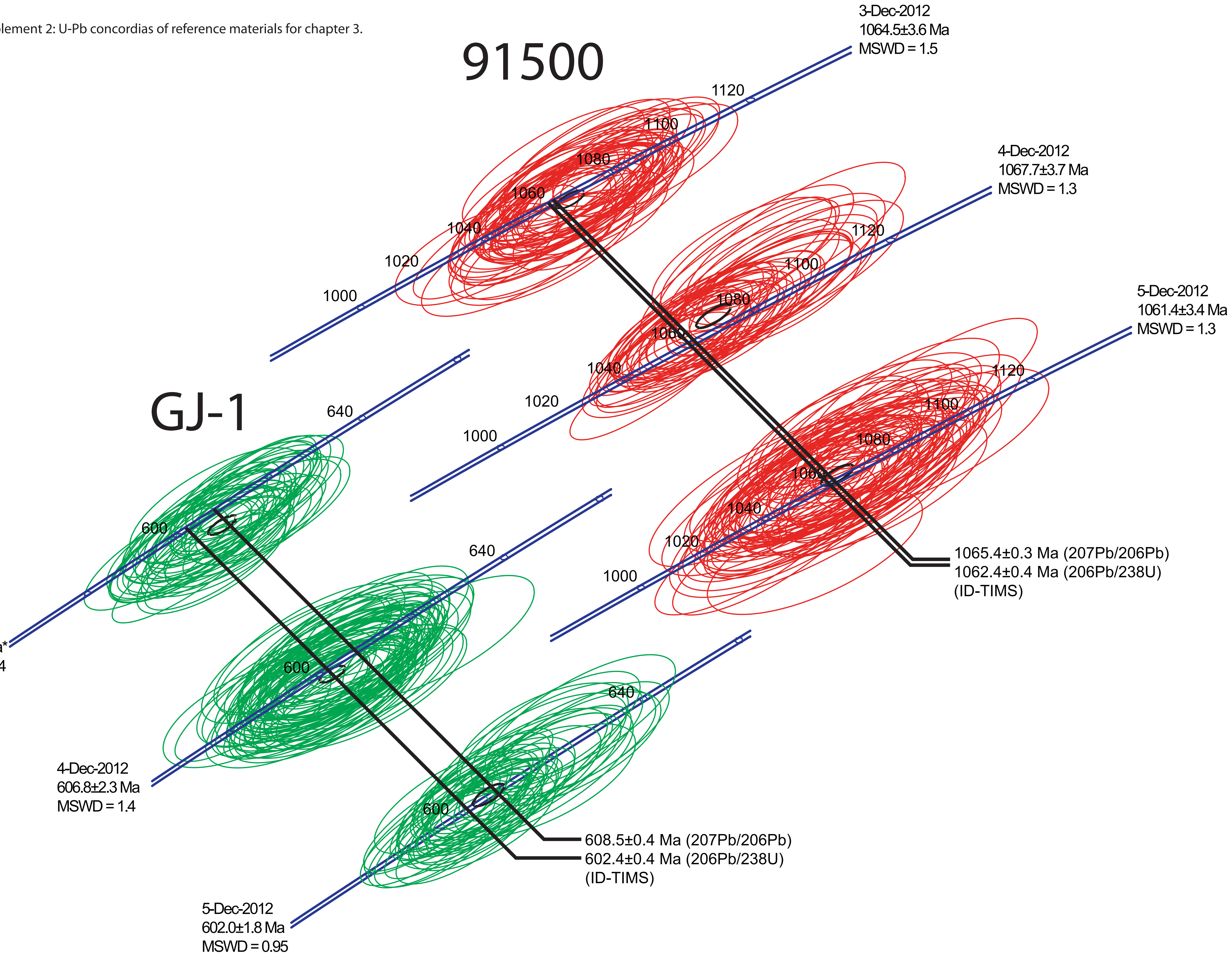
CS11-20_64	6.8	0.5	1643.2	12.3
CS11-20_18	4.6	0.3	1759.1	18.4
CS11-20_63	6.3	0.5	1357.2	19.2
CS11-20_12	5.7	0.3	1711.6	16.9
CS11-20_70	4.3	0.4	2818.8	14.9
CS11-20_42	6.1	0.5	1723.8	16.1
CS11-20_56	4.2	0.5	1610.0	12.2
CS11-20_29	5.6	0.4	1035.7	34.0
CS11-20_62	5.3	0.4	1319.1	16.9
CS11-20_9	5.9	0.4	1620.2	20.0

CS11-13_1	6.0	0.2	1592.3	9.5
CS11-13_2	6.9	0.2	1049.6	8.8
CS11-13_6	4.8	0.2	1048.1	12.5
CS11-13_7	6.6	0.2	1062.8	81.0
CS11-13_9	6.5	0.2	1074.0	14.4
CS11-13_10	8.1	0.2	1164.4	16.5
CS11-13_11	5.8	0.2	1597.8	15.1
CS11-13_12	6.7	0.2	1513.8	21.0
CS11-13_14	8.1	0.2	1651.0	5.0
CS11-13_15	6.7	0.2	1009.2	70.2
CS11-13_16	9.5	0.2	1060.1	19.2
CS11-13_17	7.1	0.2	1675.3	4.4
CS11-13_19	5.3	0.2	1655.4	3.5
CS11-13_21	7.3	0.2	1314.1	63.6
CS11-13_26	6.1	0.2	1001.8	12.2
CS11-13_28	4.5	0.2	1652.5	4.5
CS11-13_29	7.5	0.2	1454.2	8.9
CS11-13_30	5.8	0.2	1103.3	37.2
CS11-13_31	7.4	0.2	1345.4	10.0
CS11-13_32	5.7	0.2	1737.1	5.3
CS11-13_33	5.4	0.2	1404.0	30.5
CS11-13_35	7.0	0.2	1102.2	13.8
CS11-13_36	6.8	0.2	1204.9	37.7
CS11-13_37	5.5	0.2	973.5	85.5
CS11-13_38	7.1	0.2	1658.0	18.9
CS11-13_39	9.0	0.2	1620.2	9.8
CS11-13_41	6.5	0.2	1248.7	8.9
CS11-13_42	8.2	0.2	975.7	24.6
CS11-13_43	5.9	0.2	1334.7	33.1
CS11-13_44	8.8	0.2	1480.9	7.5
CS11-13_45	6.1	0.2	1649.2	6.0
CS11-13_46	5.8	0.2	1652.6	6.3
CS11-13_47	6.2	0.2	1622.4	15.1
CS11-13_49	7.1	0.2	1316.0	13.8
CS11-13_51	5.9	0.3	1644.6	34.8
CS11-13_52	6.0	0.2	1100.5	104.4
CS11-13_54	4.5	0.2	1304.3	24.9
CS11-13_55	6.5	0.2	1047.8	20.2
CS11-13_56	5.1	0.2	1536.1	17.8
CS11-13_57	8.2	0.2	1114.4	13.6
CS11-13_59	6.7	0.2	1688.4	17.0
CS11-13_62	5.8	0.2	1659.7	10.1
CS11-13_63	5.3	0.2	1302.3	85.8
CS11-13_67	7.8	0.2	1657.0	4.4
CS11-13_69	6.4	0.2	1047.7	23.0
CS11-13_71	9.1	0.2	1074.0	13.5
CS11-13_72	5.8	0.2	1764.5	7.4
CS11-13_73	6.5	0.2	2667.2	2.5
CS11-13_74	8.0	0.3	1076.5	15.1

CS11-9_30	6.8	0.2	1103.2	123.0
CS11-9_31	7.0	0.2	1056.6	53.2
CS11-9_32	6.3	0.2	1066.6	52.5
CS11-9_34	6.7	0.2	1094.8	36.1
CS11-9_35	6.7	0.2	1043.6	69.9
CS11-9_36	6.4	0.2	1103.8	77.1
CS11-9_37	7.5	0.2	1078.7	44.6
CS11-9_38	7.1	0.2	1079.5	40.9
CS11-9_39	6.3	0.2	1097.8	45.6
CS11-9_40	7.9	0.2	1066.7	18.2
CS11-9_41	6.2	0.3	1073.4	19.2
CS11-9_42	6.7	0.3	1099.2	114.3
CS11-9_43	6.6	0.2	1073.8	133.7
CS11-9_44	5.8	0.2	1057.6	28.2
CS11-9_45	6.3	0.2	1060.7	12.3
CS11-9_46	6.7	0.2	1024.8	81.6
CS11-9_47	7.0	0.2	1100.1	16.9
CS11-9_48	8.6	0.2	1062.4	111.9
CS11-9_49	5.9	0.3	1110.1	101.2
CS11-9_50	9.0	0.3	1093.2	24.3
CS11-9_51	7.3	0.2	1081.0	19.4
CS11-9_52	6.5	0.3	1157.8	76.1
CS11-9_53	5.7	0.3	1192.3	63.6
CS11-9_56	6.8	0.2	1083.4	326.8
CS11-9_58	4.7	0.2	1436.8	14.8
CS11-9_63	5.5	0.2	1229.5	17.1
CS11-9_69	5.3	0.2	1173.4	47.6
CS11-9_75	6.6	0.2	1501.0	11.6
CS11-9_80	6.0	0.2	1214.0	91.2
CS11-9_85	8.1	0.3	1094.8	82.2
CS11-9_100	5.5	0.2	1110.2	50.9
CS11-9_105	11.2	0.3	1025.5	31.5
CS11-9_106	8.3	0.2	1007.4	189.4
CS11-9_110	7.9	0.3	1048.8	85.8
CS11-9_112	5.5	0.2	1172.0	11.0

CS11-13_75	4.9	0.2	1661.1	6.9
CS11-13_77	5.7	0.2	1349.9	17.4
CS11-13_78	5.1	0.2	1617.6	19.8
CS11-13_79	6.8	0.2	1058.0	37.2
CS11-13_80	8.0	0.2	1432.5	10.7
CS11-13_82	5.8	0.2	1664.2	9.8
CS11-13_83	5.0	0.2	1342.0	16.7
CS11-13_84	5.5	0.2	1024.0	9.6
CS11-13_85	6.2	0.2	1331.8	32.4

Data supplement 2: U-Pb concordias of reference materials for chapter 3.



Data supplement 3: Detrital zircon U-Pb data for chapter 3.

Laboratory & Sample Preparation	
Laboratory name	NERC Isotope Geosciences Laboratory
Sample type/mineral	zircon
Sample preparation	Conventional mineral separation, 1 inch resin mount, 1μm polish to finish
Imaging	CL, 10nA, 10mm working distance (Univ of Edinburgh)
Laser ablation system	
Make, Model & type	ESI/New Wave Research, UP193SS
Ablation cell & volume	NIGL low volume cell with low effective volume (ca. 3-4cm^3), washout time ca.1sec
Laser wavelength (nm)	193nm
Pulse width (ns)	3-4ns
Fluence (J.cm^{-2})	2.0-2.8 J.cm^{-2}
Repetition rate (Hz)	5Hz
Ablation duration (secs)	15 seconds
Ablation pit depth / ablation rate	~5um pit depth, measured using Keyence VHX2000 and by SEM, equivalent to ~0.07μm/pulse
Spot size (μm)	25 or 35μm
Sampling mode / pattern	Static spot ablation
Carrier gas	100% He, Ar make-up gas combined ca.50% along sample line.
Cell carrier gas flow (l/min)	0.7l/min
ICP-MS Instrument	
Make, Model & type	Nu Instruments Attom SC-SF-ICP-MS
Sample introduction	Free air aspiration of desolvator mixed with carrier gas from laser
RF power (W)	1300W
Make-up gas flow (l/min)	0.7l/min Ar
Detection system	Discrete dynode MassCom ion counter
Masses measured	202, 204, 206, 207, 208, 232, 235
Integration time per peak (ms)	202, 204, 206, 208, 232 all 200us; 207 and 235 3ms (40 sweeps per cycle)
Total integration time per reading (secs) Sensitivity / Efficiency (%, element)	~0.3 seconds ~0.3%
IC Dead time (ns)	15ns
Data Processing	
Gas blank	60 second on-peak zero subtracted
Calibration strategy	91500 and GJ1 used as primary reference materials
Reference Material info Data processing package used / Correction for LIEF	91500 (Wiedenbeck et al 1995) GJ1 $^{206}Pb/^{238}U$ 602.3 ± 1Ma, $^{207}Pb/^{206}Pb$ 609.2 ± 0.7Ma (in-house TIMS, unpublished) Nu Instruments TRA acquisition software, in-house spreadsheet data processing
Mass discrimination	$^{207}Pb/^{206}Pb$ and $^{206}Pb/^{238}U$ normalised to reference material
Common-Pb correction, composition and uncertainty	No common-Pb correction applied to the data
Uncertainty level & propagation	Ages in the data table are quoted at 2sigma absolute, propagation is by quadratic addition. External reproducibility of reference material, excess variance, and decay constant uncertainties are also propagated.

Date	Sample	Grain	Spot size	204Pb cps	206Pb cps	207Pb cps	208Pb cps	232Th cps	235U cps	Th/U	Pb ppm	Th ppm	U ppm	207Pb/206 Pb	1σ %	207Pb/235 U	1σ %	206Pb/238 U	1σ %	Rho	207Pb/206Pb	2σ	206Pb/238U	2σ	207Pb/235U	2σ	Disc. % (6-38/7-6)	Disc. % (6-38/7-35)	Best Age	2s abs
12/3/12	CS12-5	1	25μm	47	76087	5784	23204	304722	3221	1.00	10	53	53	0.0763	1.09	1.859	1.92	0.1768	1.59	0.76	1103	22	1050	31	1067	25	4.8	1.6	1103	22
12/3/12	CS12-5	2	25μm	286	612966	55393	96880	1238445	20401	0.64	78	216	337	0.0919	0.69	2.845	1.83	0.2247	1.69	0.91	1465	13	1307	40	1368	27	10.8	4.5	1465	13
12/3/12	CS12-5	3	25μm	-69	139379	11146	14010	164333	5746	0.30	18	29	95	0.0798	1.18	2.038	2.21	0.1853	1.86	0.81	1192	23	1096	37	1128	30	8.1	2.9	1192	23
12/3/12	CS12-5	4	25μm	70	457409	42471	69986	1168121	16211	0.76	58	203	268	0.0939	0.87	2.687	1.58	0.2075	1.32	0.72	1507	16	1216	29	1325	23	19.3	8.2	1507	16
12/3/12	CS12-5	5	25μm	167	71791	5496	12054	151747	3071	0.52	9	26	51	0.0766	1.02	1.849	1.75	0.1751	1.43	0.72	1110	20	1040	27	1063	23	6.3	2.1	1110	20
12/3/12	CS12-5	6	25μm	109	171192	13516	33430	413200	6878	0.63	22	72	114	0.0790	0.75	2.014	1.70	0.1851	1.53	0.86	1171	15	1095	31	1120	23	6.5	2.3	1171	15
12/3/12	CS12-5	7	25μm	71	191166	14640	27685	349661	7923	0.46	24	61	131	0.0757	1.06	1.866	2.00	0.1788	1.69	0.80	1087	21	1060	33	1069	26	2.5	0.8	1087	21
12/3/12	CS12-5	8	25μm	117	87162	6569	20212	246060	3619	0.72	11	43	60	0.0764	1.17	1.899	1.99	0.1803	1.61	0.74	1106	23	1069	32	1081	26	3.4	1.1	1106	23
12/3/12	CS12-5	9	25μm	313	233337	18578	35902	419431	9555	0.46	30	73	158	0.0811	0.72	2.030	1.83	0.1817	1.68	0.90	1223	14	1076	33	1126	25	12.0	4.4	1223	14
12/3/12	CS12-5	10	25μm	64	98459	7482	23314	288850	4216	0.72	13	50	70	0.0764	1.01	1.813	2.02	0.1722	1.75	0.83	1106	20	1024	33	1050	26	7.4	2.5	1106	20
12/3/12	CS12-5	11	25μm	-69	254383	19561	40509	490664	10642	0.49	32	85	176	0.0775	1.02	1.893	1.88	0.1772	1.58	0.78	1134	20	1052	31	1079	25	7.3	2.5	1134	20
12/3/12	CS12-5	12	25μm	42	193953	15308	33485	979580	8593	1.20	25	171	142	0.0800	0.93	1.853	1.87	0.1680	1.62	0.82	1198	18	1001	30	1065	24	16.4	6.0	1198	18
12/3/12	CS12-5	13	25μm	225	221565	17474	35565	743022	9317	0.84	28	129	154	0.0784	1.09	1.902	1.85	0.1760	1.49	0.72	1157	22	1045	29	1082	24	9.7	3.4	1157	22
12/3/12	CS12-5	14	25μm	72	226485	21030	46671	442895	7145	0.65	29	77	118	0.0920	0.79	3.024	2.02	0.2385	1.86	0.90	1468	15	1379	46	1414	30	6.1	2.5	1468	15
12/3/12	CS12-5	15	25μm	206	98662	8842	24543	247197	3145	0.83	13	43	52	0.0888	1.22	2.875	2.07	0.2349	1.67	0.75	1400	23	1360	41	1375	31	2.8	1.1	1400	23
12/3/12	CS12-5	16	25μm	84	89936	7033	20437	267300	3844	0.73	11	47	64	0.0783	1.20	1.902	1.99	0.1763	1.58	0.72	1154	24	1047	30	1082	26	9.3	3.2	1154	24
12/3/12	CS12-5	17	25μm	94	110008	8446	22827	307002	4612	0.70	14	53	76	0.0773	0.98	1.908	1.75	0.1791	1.45	0.74	1129	20	1062	28	1084	23	5.9	2.0	1129	20
12/3/12	CS12-5	18	25μm	-74	183115	14433	25905	335909	7439	0.48	23	59	123	0.0792	0.83	2.016	1.71	0.1848	1.50	0.82	1176	16	1093	30	1121	23	7.0	2.5	1176	16
12/3/12	CS12-5	19	25μm	29	192432	14816	37799	479580	8127	0.62	25	84	134	0.0769	1.01	1.897	1.75	0.1789	1.44	0.73	1120	20	1061	28	1080	23	5.2	1.8	1120	20
12/3/12	CS12-5	20	25μm	80	39401	3056	8601	115982	1679	0.73	5	20	28	0.0779	1.37	1.894	2.15	0.1765	1.65	0.70	1144	27	1048	32	1079	28	8.4	2.9	1144	27
12/3/12	CS12-5	21	25μm	175	122885	9684	22117	270729	5098	0.56	16	47	84	0.0794	0.93	1.949	1.92	0.1782	1.68	0.83	1181	18	1057	33	1098	25	10.5	3.7	1181	18
12/3/12	CS12-5	22	25μm	154	230992	18530	46997	581566	9379	0.65	29	101	155	0.0804	1.00	2.038	1.76	0.1839	1.45	0.74	1207	20	1088	29	1128	24	9.8	3.5	1207	20
12/3/12	CS12-5	23	25μm	-119	116125	9009	25822	321305	5024	0.67	15	56	83	0.0788	1.20	1.911	2.26	0.1760	1.92	0.81	1167	24	1045	37	1085	30	10.4	3.7	1167	24
12/3/12	CS12-5	24	25μm	126	419977	32665	77998	988884	18209	0.57	54	172	301	0.0775	0.96	1.856	1.93	0.1737	1.67	0.82	1134	19	1033	32	1065	25	8.9	3.1	1134	19
12/3/12	CS12-5	25	25μm	-141	139288	11130	36078	759335	5967	1.34	18	132	99	0.0810	1.31	1.946	2.09	0.1744	1.64	0.71	1220	26	1037	31	1097	28	15.1	5.5	1220	26
12/3/12	CS12-5	26	25μm	92	187295	14539	38360	451288	7704	0.62	24	79	127	0.0788	1.13	1.977	2.21	0.1821	1.91	0.83	1167	22	1078	38	1108	29	7.6	2.7	1167	22
12/3/12	CS12-5	27	25μm	33	183965	14398	28586	338347	7457	0.48	23	59	123	0.0796	1.20	2.027	2.09	0.1848	1.71	0.76	1186	24	1093	34	1125	28	7.9	2.8	1186	24
12/3/12	CS12-5	28	25μm	-160	232973	17683	35272	429911	9729	0.47	30	75	161	0.0763	1.03	1.883	2.01	0.1791	1.73	0.82	1103	21	1062	34	1075	26	3.7	1.2	1103	21
12/3/12	CS12-5	29	25μm	155	328038	25373	48699	646904	13594	0.50	42	113	225	0.0791	0.87	1.968	1.83	0.1806	1.61	0.84	1174	17	1070	32	1105	24	8.8	3.1	1174	17
12/3/12	CS12-5	30	25μm	-48	117229	10692	43698	402472	3661	1.16	15	70	61	0.0918	1.34	3.078	2.17	0.2433	1.70	0.72	1464	26	1404	43	1427	33	4.1	1.7	1464	26
12/3/12	CS12-5	31	25μm	127	53972	4328	14512	176035	2320	0.80	7	31	38	0.0824	1.66	1.991	2.61	0.1753	2.01	0.73	1255	32	1041	39	1112	35	17.1	6.4	1255	32
12/3/12	CS12-5	32	25μm	-39	61034	5070	7266	84001	2509	0.35	8	15	42	0.0846	1.96	2.173	2.81	0.1864	2.02	0.67	1306	38	1102	41	1172	38	15.7	6.0	1306	38
12/3/12	CS12-5	33	25μm	-106	131191	10268	21464	260998	5330	0.52	17	45	88	0.0795	1.44	2.019	2.29	0.1842	1.79	0.72	1185	28	1090	36	1122	31	8.0	2.8	1185	28
12/3/12	CS12-5	34	25μm	-11	141920	10866	21641	269736	5792	0.49	18	47	96	0.0778	0.95	2.016	1.81	0.1881	1.54	0.79	1142	19	1111	31	1121	24	2.7	0.9	1142	19
12/3/12	CS12-5	35	25μm	288	246672	22823	72706	1151554	9274	1.31	32	201	153	0.0928	0.71	2.536	1.48	0.1984	1.30	0.78	1483	13	1166	28	1282	21	21.4	9.0	1483	13
12/3/12	CS12-5	36	25μm	49	52153	3956	10135	132813	2228	0.63	7	23	37	0.0762	1.77	1.847	2.74	0.1758	2.09	0.72	1101	35	1044	40	1062	35	5.2	1.7	1101	35
12/3/12	CS12-5	37	25μm	171	212848	24499	18322	139313	4921	0.30	27	24	81	0.1159	0.91	5.197	1.92	0.3252	1.69	0.84	1895	16	1815	53	1852	32	4.2	2.0	1895	16
12/3/12	CS12-5	38	25μm	-49	73064	5711	18639	242050	3190	0.80	9	42	53	0.0784	1.17	1.853	1.87	0.1716	1.46	0.68	1156	23	1021	27	1065	24	11.7	4.1	1156	23
12/3/12	CS12-5	39	25μm	-91	93477	7373	14195	174917	3827	0.48	12	30	63	0.0793	0.79	1.974	1.92	0.1807	1.75	0.89	1179	16	1071	34	1107	26	9.2	3.3	1179	16
12/3/12	CS12-5	40	25μm	240	168646	12929	27553	345079	6723	0.54	22	60	111	0.0775	1.09	1.995	1.95	0.1867	1.62	0.77	1135	22	1104	33	1114	26	2.8	0.9	1135	22
12/3/12	CS12-5	41	25μm	-196	35706	2909	3177	127890	1584	0.85	5	22	26	0.0804	1.60	1.923	2.56	0.1735	1.99	0.74	1207	32	1032	38	1089	34	14.5	5.3	1207	32
12/3/12	CS12-5	42	25μm	47	125312	9680	35307	434417	5478	0.84	16	76	91	0.0778	1.23	1.891	2.14	0.1765	1.75	0.77	1141	25	1048	34	1078	28	8.1	2.8	1141	25
12/3/12	CS12-5	43	25μm	110	52740	5130	8053	67425	1655	0.43	7	12	27	0.0970	2.22	3.178	2.93	0.2378	1.92	0.60	1566	42	1375	47	1452	44	12.2	5.3	1566	42
12/3/12	CS12-5	44	25μm	-82	48367	3926	9031	108693	2016	0.57	6	19	33	0.0810	1.67	2.029	2.87	0.1816	2.33	0.79	1223	33	1076	46	1125	38	12.0	4.4	1223	33
12/3/12	CS12-5	45	25μm	252	42219	3449	10157	113855	1805	0.66	5	20	30	0.0811	2.06	1.979	3.11	0.1770	2.34	0.72	1224	40	1050	45	1108	41	14.2	5.2	1224	40
12/3/12	CS12-5	46	25μm	37	173666	14055	52240	582637	7013	0.87	22	101	116	0.0803	1.37	2.098	2.07	0.1896	1.54	0.66	1205	27	1119	32	1148	28	7.1	2.5	1205	27
12/3/12	CS12-5	47	25μm	-16	62048	5631	17137	624050	3104	2.12	8	109	51	0.0907	1.25	1.914	2.13	0.1532	1.72	0.75	1440	24	919	29	1086	28	36.2	15.4	1440	24
12/3/12	CS12-5	48	25μm	167	221201	17871	50668	735000	10636	0.73	28	128	176	0.0807	0.86	1.743	1.56	0.1567	1.30	0.71	1215	17	938	23	1025	20	22.8	8.4	1215	17
12/3/12	CS12-5	49	25μm	185	562512	46741	99374	2683947	25716	1.10	72	468	425	0.0846	0.60	1.906	1.51	0.1634	1.38	0.87	1307	12	975	25	1083	20	25.4	9.9	1307	12
12/3/12	CS12-5	50	25μm	150	198585	15467	33906	437522	7988	0.58	25	76	132	0.0784	0.89	2.014	1.62	0.1864	1.35	0.73	1158	18	1102	27	1120	22	4.8	1.7	1158	18
12/3/12	CS12-5	51	25μm	132	14297	1285	3044	32386	452	0.75	2	6	7	0.0952	3.22	3.023	4.04	0.2303	2.43	0.57	1533	61	1336	59	1413	60	12.8	5.5	1533	61
12/3/12	CS12-5	52	25μm	-51	228697	17040	32464	417422	9151	0.48	29	73	151	0.0762	0.98	1.938	1.73	0.1845	1.43	0.74	1100	20	1092	29	1094	23	0.8	0.2	1100	20
12/3/12	CS12-5	53	25μm	59	184246	16171	31760	344188	6251	0.58	24	60	103	0.0873	1.07	2.680	1.87	0.2227	1.54	0.75	1367	21	1296	36	1323	27	5.2	2.0	1367	21
12/3/12	CS12-5	54	25μm	153	285355	25432	43564	422323	9404	0.47	36	74	156	0.0901	0.81	2.868	1.70	0.2309	1.50	0.83	1429	15	1339	36	1374	25	6.3	2.5	1429	15
12/3/12	CS12-5	55	25μm	-153	306628	23811	53786	688062	12320	0.59	39	120	204	0.0787	1.33	2.060	2.07	0.1899	1.58	0.69	1165	26	1121	33	1136	28	3.8	1.3	1165	26
12/3/12	CS12-5	56	25μm	-100	114190	10658	27330	246756	3587	0.72	15	43	59	0.0934	1.10	3.148	2.11	0.2446	1.80	0.81	1496	21	1411	45	1445	32	5.7	2.4	1496	21
12/3/12	CS12-5	57	25μm	-34	138785	10629	20608	246649	5971	0.44	18	43	99	0.0778	1.17	1.877	1.95	0.1750	1.56	0.73	1142	23	1040	30	1073	25	9.0	3.1	1142	23
12/3/12	CS12-5	58	25μm	5	197368	15200	38199	440820	7995	0.58	25	77	132	0.0771	0.84	1.986	1.68	0.1870	1.45	0.80	1124	17	1105	29	1111	22	1.7	0.5	1124	17
12/3/12	CS12-5	59	25μm	-118	61325	5434	13710	139318	2075	0.71	8	24	34	0.0905	1.80	2.712	2.54	0.2175	1.79	0.64	1436	34	1268	41	1332	37	11.7	4.8	1436	34

12/3/12	CS12-5	60	25µm	232	325659	27985	43194	427659	10995	0.41	42	74	182	0.0867	0.85	2.656	2.05	0.2222	1.86	0.89	1355	16	1294	43	1316	30	4.5	1.7	1355	16
12/3/12	CS12-5	61	25µm	195	77731	5963	35313	430822	3400	1.33	10	75	56	0.0767	1.44	1.832	2.66	0.1733	2.23	0.82	1114	29	1030	42	1057	34	7.5	2.5	1114	29
12/3/12	CS12-5	62	25µm	143	257938	23533	87872	790143	8220	1.01	33	138	136	0.0923	1.14	3.020	2.11	0.2374	1.77	0.80	1474	22	1373	44	1413	32	6.8	2.8	1474	22
12/3/12	CS12-5	63	25µm	39	416532	32456	161562	2028375	18276	1.17	53	353	302	0.0774	1.00	1.876	1.85	0.1760	1.56	0.78	1130	20	1045	30	1073	24	7.6	2.6	1130	20
12/3/12	CS12-5	64	25µm	102	48498	3751	8340	100817	2002	0.53	6	18	33	0.0776	1.13	1.942	1.85	0.1817	1.47	0.70	1135	22	1076	29	1096	24	5.2	1.8	1135	22
12/3/12	CS12-5	65	25µm	168	173193	13322	35103	440897	6990	0.66	22	77	116	0.0788	0.79	2.014	1.62	0.1855	1.42	0.80	1167	16	1097	29	1120	22	6.0	2.1	1167	16
12/3/12	CS12-5	66	25µm	420	272649	25774	90864	928857	8559	1.14	35	162	142	0.0955	0.96	3.167	1.84	0.2406	1.57	0.79	1539	18	1390	39	1449	28	9.7	4.1	1539	18
12/3/12	CS12-5	67	25µm	-95	212407	16289	48981	691795	8904	0.82	27	121	147	0.0780	1.25	1.961	2.14	0.1824	1.74	0.76	1147	25	1080	34	1102	28	5.9	2.0	1147	25
12/3/12	CS12-5	68	25µm	67	46304	3518	11781	138311	2016	0.72	6	24	33	0.0784	1.56	1.899	2.65	0.1759	2.15	0.78	1156	31	1045	41	1081	35	9.6	3.4	1156	31
12/3/12	CS12-5	69	25µm	-104	302853	27195	93844	882656	10136	0.92	39	154	168	0.0905	0.82	2.835	1.89	0.2273	1.71	0.87	1436	16	1320	41	1365	28	8.1	3.3	1436	16
12/3/12	CS12-5	70	25µm	-196	58570	4348	13966	165734	2506	0.70	7	29	41	0.0758	1.53	1.836	2.64	0.1759	2.16	0.79	1089	31	1044	41	1059	34	4.1	1.3	1089	31
12/3/12	CS12-5	71	25µm	-85	52944	4137	12658	145067	2247	0.68	7	25	37	0.0789	1.47	1.921	2.32	0.1766	1.79	0.72	1170	29	1048	35	1088	30	10.4	3.7	1170	29
12/3/12	CS12-5	72	25µm	123	258065	29418	81769	571438	5977	1.01	33	100	99	0.1150	0.95	5.231	1.97	0.3301	1.72	0.84	1879	17	1839	55	1858	33	2.2	1.0	1879	17
12/3/12	CS12-5	73	25µm	57	221691	20399	21864	196726	7043	0.29	28	34	117	0.0926	1.01	3.084	1.71	0.2418	1.38	0.70	1479	19	1396	34	1429	26	5.6	2.3	1479	19
12/3/12	CS12-5	74	25µm	31	77019	6642	11866	119758	2512	0.50	10	21	42	0.0888	1.26	2.814	2.13	0.2298	1.72	0.75	1400	24	1334	41	1359	31	4.8	1.9	1400	24
12/3/12	CS12-5	75	25µm	100	173261	13565	30655	353530	7089	0.53	22	62	117	0.0787	1.11	1.969	2.16	0.1815	1.85	0.82	1165	22	1075	37	1105	29	7.7	2.7	1165	22
12/3/12	CS12-5	76	25µm	105	31309	2425	6446	77218	1413	0.58	4	13	23	0.0791	1.76	1.834	2.97	0.1682	2.39	0.78	1174	35	1002	44	1058	38	14.6	5.2	1174	35
12/3/12	CS12-5	77	25µm	173	346143	26234	54869	675422	14670	0.48	44	118	243	0.0762	0.97	1.858	1.72	0.1768	1.43	0.74	1102	19	1050	28	1066	23	4.7	1.6	1102	19
12/3/12	CS12-5	78	25µm	-156	242119	18451	50993	726693	10393	0.74	31	127	172	0.0767	0.83	1.858	1.74	0.1757	1.52	0.82	1114	17	1043	29	1066	23	6.3	2.1	1114	17
12/3/12	CS12-5	79	25µm	118	42182	3167	12484	149809	1793	0.88	5	26	30	0.0756	1.23	1.857	2.26	0.1782	1.90	0.80	1086	25	1057	37	1066	29	2.6	0.8	1086	25
12/3/12	CS12-5	80	25µm	-3	134542	10465	19506	308014	5612	0.58	17	54	93	0.0786	0.88	1.938	1.70	0.1788	1.45	0.78	1163	18	1061	28	1094	23	8.8	3.1	1163	18
12/3/12	CS12-5	81	25µm	124	34552	2615	7994	102020	1432	0.75	4	18	24	0.0769	1.70	1.950	2.64	0.1839	2.02	0.72	1120	34	1088	40	1098	35	2.8	0.9	1120	34
12/3/12	CS12-5	82	25µm	-141	77749	5961	19210	253662	3378	0.79	10	44	56	0.0760	1.28	1.853	2.16	0.1769	1.74	0.75	1096	26	1050	34	1065	28	4.2	1.4	1096	26
12/3/12	CS12-5	83	25µm	-30	251827	20137	40004	771232	10442	0.78	32	134	173	0.0790	0.88	2.031	1.60	0.1865	1.34	0.73	1172	17	1103	27	1126	22	5.9	2.1	1172	17
12/3/12	CS12-5	84	25µm	13	60883	4736	11795	147254	2650	0.59	8	26	44	0.0773	1.04	1.837	1.94	0.1725	1.64	0.79	1129	21	1026	31	1059	25	9.2	3.1	1129	21
12/3/12	CS12-5	85	25µm	73	20944	1653	6622	80258	898	0.94	3	14	15	0.0787	2.08	1.929	3.26	0.1779	2.51	0.75	1164	41	1056	49	1091	43	9.3	3.3	1164	41
12/3/12	CS12-5	86	25µm	-15	106795	9702	31078	284525	3171	0.94	14	50	52	0.0920	1.00	3.213	1.90	0.2535	1.62	0.80	1467	19	1456	42	1460	29	0.7	0.3	1467	19
12/3/12	CS12-5	87	25µm	-29	19064	1497	3236	41399	798	0.55	2	7	13	0.0802	2.02	2.026	3.01	0.1834	2.22	0.70	1201	40	1085	44	1124	40	9.7	3.5	1201	40
12/3/12	CS12-5	88	25µm	26	42508	3390	7756	88280	1828	0.51	5	15	30	0.0798	1.86	1.949	2.89	0.1773	2.21	0.73	1191	37	1052	43	1098	38	11.6	4.2	1191	37
12/3/12	CS12-5	89	25µm	195	212271	17914	44464	1040354	9429	1.16	27	181	156	0.0836	1.16	1.987	2.10	0.1724	1.75	0.79	1284	23	1025	33	1111	28	20.2	7.7	1284	23
12/3/12	CS12-5	90	25µm	222	312099	23488	46802	566912	13255	0.45	40	99	219	0.0757	1.09	1.860	2.01	0.1784	1.69	0.79	1086	22	1058	33	1067	26	2.6	0.8	1086	22
12/3/12	CS12-5	91	25µm	-29	42385	3271	8626	111084	1863	0.63	5	19	31	0.0771	1.65	1.866	2.70	0.1757	2.14	0.76	1123	33	1043	41	1069	35	7.1	2.4	1123	33
12/3/12	CS12-5	92	25µm	37	369716	29005	41056	493082	15202	0.34	47	86	251	0.0805	1.25	2.039	2.18	0.1837	1.78	0.77	1210	25	1087	36	1129	29	10.2	3.7	1210	25
12/3/12	CS12-5	93	25µm	103	255906	18732	33637	410340	10602	0.41	33	71	175	0.0738	1.39	1.844	2.44	0.1812	2.01	0.79	1037	28	1073	40	1061	32	-3.5	-1.1	1037	28
12/3/12	CS12-5	94	25µm	164	416113	32171	74582	1300561	17608	0.78	53	227	291	0.0774	1.01	1.918	2.01	0.1797	1.74	0.82	1132	20	1065	34	1087	26	5.9	2.0	1132	20
12/3/12	CS12-5	95	25µm	154	177647	13743	44959	801481	7916	1.07	23	140	131	0.0770	0.97	1.827	1.75	0.1720	1.46	0.75	1122	19	1023	28	1055	23	8.8	3.0	1122	19
12/3/12	CS12-5	96	25µm	173	355322	27811	62502	796387	14572	0.58	45	139	241	0.0793	0.84	1.989	1.78	0.1821	1.57	0.84	1179	17	1078	31	1112	24	8.5	3.0	1179	17
12/3/12	CS12-5	97	25µm	2	367345	32984	50098	924065	12591	0.77	47	161	208	0.0905	0.85	2.787	1.74	0.2235	1.52	0.82	1436	16	1300	36	1352	26	9.4	3.8	1436	16
12/3/12	CS12-5	98a	25µm	-67	307074	28117	38892	630207	9447	0.70	39	110	156	0.0933	0.81	3.181	1.65	0.2474	1.44	0.81	1494	15	1425	37	1452	25	4.6	1.9	1494	15
12/3/12	CS12-5	98b	25µm	-59	135932	13895	43268	365438	3632	1.06	17	64	60	0.1031	1.12	3.986	1.93	0.2805	1.57	0.74	1680	21	1594	44	1631	31	5.1	2.3	1680	21
12/3/12	CS12-5	99	25µm	-177	70005	5335	16199	209100	2951	0.75	9	36	49	0.0767	1.21	1.876	1.95	0.1774	1.53	0.70	1115	24	1053	30	1073	26	5.5	1.9	1115	24
12/3/12	CS12-5	100	25µm	307	276163	29427	29145	237200	7106	0.35	35	41	118	0.1067	0.90	4.340	2.04	0.2952	1.83	0.87	1743	17	1668	54	1701	33	4.3	2.0	1743	17
12/3/12	CS12-5	101	25µm	-155	111167	12387	39222	267110	2583	1.09	14	47	43	0.1140	1.07	5.117	2.15	0.3257	1.87	0.84	1864	19	1817	59	1839	36	2.5	1.2	1864	19
12/3/12	CS12-5	102	25µm	-62	153550	11582	24891	303329	6597	0.48	20	53	109	0.0762	0.97	1.865	1.87	0.1775	1.59	0.80	1101	19	1053	31	1069	24	4.4	1.4	1101	19
12/3/12	CS12-5	103	25µm	-115	225328	17349	40957	487366	9449	0.54	29	85	156	0.0780	1.08	1.936	2.04	0.1801	1.73	0.80	1146	21	1068	34	1093	27	6.8	2.4	1146	21
12/3/12	CS12-5	104	25µm	98	154079	11933	22914	274707	6832	0.42	20	48	113	0.0782	1.00	1.876	2.13	0.1741	1.88	0.86	1151	20	1035	36	1073	28	10.1	3.5	1151	20
12/3/12	CS12-5	105	25µm	316	141636	10984	20705	235193	5882	0.42	18	41	97	0.0782	1.15	1.926	2.11	0.1786	1.78	0.80	1153	23	1060	35	1090	28	8.1	2.8	1153	23
12/3/12	CS12-5	106	25µm	172	376866	32574	59619	649186	12426	0.55	48	113	206	0.0884	0.97	2.818	1.69	0.2314	1.39	0.72	1391	19	1342	34	1360	25	3.5	1.4	1391	19
12/3/12	CS12-5	107	25µm	-84	52357	4468	10068	92445	1810	0.54	7	16	30	0.0873	1.01	2.622	1.98	0.2179	1.71	0.82	1368	19	1271	39	1307	29	7.1	2.8	1368	19
12/3/12	CS12-5	108	25µm	205	521380	40767	96157	2190430	23986	0.96	67	382	397	0.0795	0.75	1.786	1.77	0.1630	1.60	0.87	1184	15	974	29	1040	23	17.8	6.4	1184	15
12/3/12	CS12-5	109	25µm	294	115553	10233	13886	130310	3820	0.36	15	23	63	0.0895	1.05	2.826	2.06	0.2292	1.78	0.82	1414	20	1330	43	1362	30	6.0	2.4	1414	20
12/3/12	CS12-5	110	25µm	76	598117	63560	75701	643465	16653	0.41	76	112	275	0.1071	0.83	4.031	1.77	0.2731	1.56	0.84	1751	15	1557	43	1641	28	11.1	5.1	1751	15
12/3/12	CS12-5	111	25µm	-117	70928	5458	18232	215894	3113	0.73	9	38	52	0.0781	2.14	1.884	2.96	0.1750	2.03	0.64	1149	43	1040	39	1075	38	9.5	3.3	1149	43
12/3/12	CS12-5	112	25µm	65	143376	11207	19991	233170	5993	0.41	18	41	99	0.0794	1.07	1.980	2.02	0.1811	1.72	0.80	1181	21	1073	34	1109	27	9.2	3.2	1181	21
12/3/12	CS12-5	113	25µm	181	137839	10867	39779	467937	5908	0.83	18	82	98	0.0781	0.90	1.912	1.74	0.1777	1.49	0.79	1149	18	1054	29	1085	23	8.3	2.9	1149	18
12/3/12	CS12-5	114	25µm	-122	205277	16180	28351	345367	8579	0.42	26	60	142	0.0781	0.86	1.999	1.62	0.1856	1.38	0.76	1150	17	1098	28	1115	22	4.6	1.6	1150	17
12/3/12	CS12-5	115	25µm	139	170296	13845	28750	316741	6208	0.54	22	55	103	0.0825	0.94	2.364	1.72	0.2079	1.44	0.75	1257	18	1218	32	1232	24	3.2	1.1	1257	18
12/3/12	CS12-5	116	25µm	-198	144740	11445	23189	289192	6025	0.51	18	50	100	0.0786	0.85	2.003	1.60	0.1850	1.36	0.75	1161	17	1094	27	1116	21	5.7	2.0	1161	17
12/3/12	CS12-5	117	25µm	-65	129839	9731	31707	413317	5406	0.81	17	72	89	0.0756	0.87	1.878	1.65	0.1802	1.41	0.77	1085	17	1068	28	1073	22	1.5	0.5	1085	17
12/3/12	CS12-5	118	25µm	-44	123537	9438	22042	273914	5085	0.57	16	48	84	0.0761	0.78	1.934	1.77	0.1844	1.59	0.86	1098	16	1091	32	1093	23	0.6	0.2	1098	16
12/3/12	CS12-5	119	25µm	-17	8188	686	1103	12525	343	0.38	1	2	6	0.0818	3.05	2.019	4.07	0.1791	2.69	0.63	1241	60	1062	52	1122	54	14.4	5.3	1241	60
12/3/12	CS12-5	120	25µm	-81	279771	22419	95295	1039892	10511	1.04	36	181	174	0.0810	0.75	2.279	1.48	0.2041	1.27	0.75	1222	15	1197	28	1206	21	2.0	0.7	1222	15

12/3/12	CS12-5	121	25µm	-38	418827	31905	92832	1294221	18504	0.74	53	225	306	0.0770	0.91	1.826	1.90	0.1722	1.67	0.84	1120	18	1024	32	1055	25	8.5	2.9	1120	18
12/3/12	CS12-5	122a	25µm	570	562959	52743	146685	2701504	37474	0.76	72	471	620	0.0949	0.88	1.531	1.88	0.1170	1.66	0.85	1526	17	713	22	943	23	53.3	24.3	1526	17
12/3/12	CS12-5	122b	25µm	448	479898	43304	115578	2305673	27137	0.89	61	402	449	0.0907	0.93	1.712	1.92	0.1369	1.68	0.83	1441	18	827	26	1013	24	42.6	18.3	1441	18
12/3/12	CS12-5	122c	25µm	225	383218	28925	58431	722298	15980	0.48	49	126	264	0.0755	1.04	1.917	1.84	0.1843	1.51	0.75	1081	21	1090	30	1087	24	-0.8	-0.3	1081	21
12/3/12	CS12-5	123	25µm	-39	303236	27685	57779	595512	9641	0.65	39	104	159	0.0918	1.00	3.086	1.98	0.2439	1.71	0.82	1463	19	1407	43	1429	30	3.8	1.6	1463	19
12/3/12	CS12-5	124	25µm	51	104313	8090	15037	171865	4493	0.40	13	30	74	0.0794	1.35	1.933	2.16	0.1766	1.69	0.72	1182	27	1048	33	1092	29	11.3	4.0	1182	27
12/3/12	CS12-5	125	25µm	25	150786	11103	23355	275073	6395	0.45	19	48	106	0.0757	1.30	1.813	2.21	0.1738	1.78	0.76	1087	26	1033	34	1050	28	4.9	1.6	1087	26
12/3/12	CS12-5	126	25µm	-10	154436	11780	25219	272595	6350	0.45	20	47	105	0.0782	1.29	1.966	2.03	0.1823	1.57	0.69	1153	26	1079	31	1104	27	6.4	2.2	1153	26
12/3/12	CS12-3	1	25µm	-147	144584	12515	26093	263493	5048	0.55	18	46	84	0.0860	1.20	2.653	2.17	0.2238	1.81	0.79	1339	23	1302	43	1316	31	2.7	1.0	1339	23
12/3/12	CS12-3	2a	25µm	-27	86860	5450	20798	562320	8609	0.69	11	98	142	0.0625	1.93	0.680	2.69	0.0789	1.87	0.64	692	41	489	18	527	22	29.2	7.0	489	18
12/3/12	CS12-3	2b	25µm	-74	81148	5014	20425	504753	7682	0.69	10	88	127	0.0621	1.33	0.704	1.98	0.0822	1.47	0.64	678	28	509	14	541	16	25.0	5.9	509	14
12/3/12	CS12-3	3	35µm	-184	175953	13780	30269	376750	7689	0.52	22	66	127	0.0780	1.03	1.890	1.94	0.1757	1.64	0.79	1148	21	1044	31	1078	25	9.1	3.2	1148	21
12/3/12	CS12-3	4a	25µm	70	157693	10682	39284	1171091	15262	0.81	20	204	252	0.0670	1.47	0.731	2.16	0.0793	1.58	0.65	837	31	492	15	557	18	41.2	11.8	492	15
12/3/12	CS12-3	4b	25µm	-112	384162	22478	81864	2289072	36656	0.66	49	399	606	0.0591	0.87	0.657	1.74	0.0807	1.51	0.81	570	19	501	15	513	14	12.3	2.4	501	15
12/3/12	CS12-3	5	25µm	147	178414	14196	27070	320160	6797	0.50	23	56	112	0.0812	1.19	2.233	2.07	0.1995	1.69	0.76	1227	23	1173	36	1192	29	4.5	1.6	1227	23
12/3/12	CS12-3	6	25µm	327	133068	31526	34417	1087655	4196	2.73	17	189	69	0.2383	1.15	8.116	2.70	0.2471	2.44	0.89	3109	18	1424	62	2244	48	54.2	36.6	3109	18
12/3/12	CS12-3	7a	25µm	-22	35847	2136	8888	259830	3440	0.80	5	45	57	0.0606	1.51	0.660	2.65	0.0791	2.17	0.79	623	33	491	20	515	21	21.2	4.6	491	20
12/3/12	CS12-3	7b	25µm	79	38665	2159	10654	281621	3642	0.81	5	49	60	0.0577	1.79	0.656	2.92	0.0825	2.30	0.76	518	39	511	23	512	23	1.5	0.2	511	23
12/3/12	CS12-3	8	25µm	265	332102	28019	85133	1296138	14358	0.95	42	226	238	0.0845	2.52	2.084	3.15	0.1789	1.89	0.54	1305	49	1061	37	1144	42	18.7	7.2	1305	49
12/3/12	CS12-3	9	25µm	94	140994	12595	31364	322628	4846	0.70	18	56	80	0.0889	1.20	2.795	2.38	0.2282	2.06	0.84	1401	23	1325	49	1354	35	5.4	2.1	1401	23
12/3/12	CS12-3	10	25µm	34	93140	7639	22299	238657	3515	0.71	12	42	58	0.0844	1.48	2.370	2.47	0.2038	1.98	0.76	1302	29	1195	43	1234	35	8.2	3.1	1302	29
12/3/12	CS12-3	11	25µm	-65	45601	3377	7094	88673	1983	0.47	6	15	33	0.0764	1.66	1.875	2.85	0.1781	2.32	0.79	1106	33	1056	45	1072	37	4.4	1.5	1106	33
12/3/12	CS12-3	12	25µm	11	44374	3476	8948	137281	2018	0.72	6	24	33	0.0794	2.02	1.863	3.15	0.1702	2.42	0.74	1183	40	1013	45	1068	41	14.4	5.2	1183	40
12/3/12	CS12-3	13	25µm	333	96435	8253	17709	188259	3246	0.61	12	33	54	0.0865	1.76	2.725	2.83	0.2287	2.21	0.75	1349	34	1327	53	1335	41	1.6	0.6	1349	34
12/3/12	CS12-3	14	25µm	-20	234801	18353	35649	442328	10001	0.47	30	77	165	0.0782	1.07	1.969	1.99	0.1827	1.68	0.79	1152	21	1082	33	1105	26	6.1	2.1	1152	21
12/3/12	CS12-3	15	25µm	125	449705	39270	84808	851123	14940	0.60	57	148	247	0.0883	0.68	2.814	1.50	0.2313	1.34	0.82	1388	13	1341	32	1359	22	3.4	1.3	1388	13
12/3/12	CS12-3	16	25µm	-107	222728	19753	31925	310992	7410	0.44	28	54	123	0.0893	0.77	2.839	1.65	0.2307	1.46	0.83	1410	15	1338	35	1366	24	5.1	2.0	1410	15
12/3/12	CS12-3	17	25µm	-88	91561	8174	18761	187649	3147	0.63	12	33	52	0.0908	1.21	2.854	2.08	0.2280	1.69	0.76	1443	23	1324	40	1370	31	8.2	3.3	1443	23
12/3/12	CS12-3	18	25µm	1224	186245	27923	87784	1406911	6845	2.16	24	245	113	0.1645	5.63	4.910	6.06	0.2166	2.24	0.34	2502	95	1264	51	1804	97	49.5	29.9	2502	95
12/3/12	CS12-3	19	25µm	-7	102679	9485	22028	203821	3205	0.67	13	36	53	0.0928	1.06	3.200	2.08	0.2501	1.79	0.82	1484	20	1439	46	1457	32	3.0	1.2	1484	20
12/3/12	CS12-3	20	25µm	83	106531	9451	18327	192892	3523	0.58	14	34	58	0.0916	1.20	2.972	2.27	0.2353	1.92	0.81	1460	23	1362	47	1400	34	6.7	2.7	1460	23
12/3/12	CS12-3	21a	25µm	64	54320	3123	9246	256956	5062	0.53	7	45	84	0.0573	1.57	0.653	2.44	0.0826	1.86	0.71	503	35	512	18	510	19	-1.8	-0.4	512	18
12/3/12	CS12-3	21b	25µm	-1	75348	4520	14700	401169	6986	0.60	10	70	116	0.0591	1.22	0.672	2.20	0.0825	1.83	0.79	570	27	511	18	522	18	10.3	2.0	511	18
12/3/12	CS12-3	22	25µm	-229	413644	42982	71026	913538	15553	0.62	53	159	257	0.1041	0.91	2.920	1.98	0.2035	1.76	0.86	1698	17	1194	38	1387	30	29.7	13.9	1698	17
12/3/12	CS12-3	23	25µm	-37	34821	3151	6313	64449	1231	0.55	4	11	20	0.0924	1.82	2.797	3.00	0.2196	2.38	0.77	1475	35	1280	55	1355	44	13.2	5.5	1475	35
12/3/12	CS12-3	24	25µm	-17	417019	33494	69518	1522380	21624	0.74	53	265	358	0.0798	0.97	1.642	1.92	0.1493	1.65	0.82	1193	19	897	28	987	24	24.8	9.1	1193	19
12/3/12	CS12-3	25	25µm	-102	76935	6943	10946	109246	2595	0.44	10	19	43	0.0913	1.39	2.863	2.53	0.2276	2.12	0.81	1452	26	1322	50	1372	37	8.9	3.7	1452	26
12/3/12	CS12-3	26	25µm	-97	21823	2010	10175	103251	759	1.43	3	18	13	0.0912	2.16	2.799	3.36	0.2227	2.58	0.74	1451	41	1296	60	1355	49	10.7	4.4	1451	41
12/3/12	CS12-3	27	25µm	-240	167591	17282	21361	175734	4652	0.40	21	31	77	0.1013	1.06	3.885	2.00	0.2782	1.70	0.80	1649	20	1582	47	1611	32	4.0	1.8	1649	20
12/3/12	CS12-3	28	25µm	-46	82643	4931	19220	508038	8030	0.67	11	88	133	0.0598	1.38	0.665	2.06	0.0806	1.53	0.65	596	30	500	15	517	17	16.1	3.4	500	15
12/3/12	CS12-3	29	25µm	30	139382	12241	27049	282171	4638	0.64	18	49	77	0.0880	0.74	2.792	1.98	0.2301	1.83	0.91	1383	14	1335	44	1353	29	3.5	1.3	1383	14
12/3/12	CS12-3	30	25µm	204	44109	2933	8092	195794	4328	0.48	6	34	72	0.0700	3.35	0.762	3.87	0.0790	1.95	0.45	927	69	490	18	575	33	47.1	14.8	490	18
12/3/12	CS12-3	31	25µm	-76	74657	6031	18042	209567	3106	0.71	10	37	51	0.0834	1.23	2.081	2.36	0.1809	2.02	0.83	1280	24	1072	40	1143	32	16.2	6.2	1280	24
12/3/12	CS12-3	32	25µm	93	181660	14148	59142	1225178	7984	1.62	23	213	132	0.0791	1.02	1.848	2.04	0.1695	1.76	0.83	1175	20	1009	33	1063	26	14.1	5.0	1175	20
12/3/12	CS12-3	33	25µm	252	121769	11017	19057	174206	3855	0.48	16	30	64	0.0938	1.26	3.139	2.39	0.2429	2.03	0.82	1503	24	1402	51	1442	36	6.7	2.8	1503	24
12/3/12	CS12-3	34	25µm	-130	630585	63511	99930	1503267	21524	0.74	81	262	356	0.1023	0.98	3.173	2.07	0.2250	1.82	0.85	1667	18	1308	43	1451	31	21.5	9.8	1667	18
12/3/12	CS12-3	35	25µm	-161	414858	38437	75094	666577	13255	0.53	53	116	219	0.0933	0.89	3.144	1.65	0.2446	1.39	0.75	1493	17	1410	35	1443	25	5.5	2.3	1493	17
12/3/12	CS12-3	36	25µm	-4	91339	7156	19715	220523	3394	0.68	12	38	56	0.0794	1.42	2.300	2.37	0.2103	1.90	0.76	1181	28	1230	42	1212	33	-4.2	-1.5	1181	28
12/3/12	CS12-3	37	25µm	131	389485	34970	31180	364343	12790	0.30	50	63	212	0.0900	0.74	2.903	1.50	0.2341	1.30	0.77	1425	14	1356	32	1383	22	4.8	1.9	1425	14
12/3/12	CS12-3	38	25µm	42	114339	6736	26666	735963	10933	0.71	15	128	181	0.0597	1.35	0.669	2.64	0.0814	2.27	0.84	591	29	504	22	520	21	14.7	3.0	504	22
12/3/12	CS12-3	39	25µm	-39	113995	8777	22205	287257	4850	0.62	15	50	80	0.0782	1.27	1.884	2.19	0.1749	1.79	0.77	1151	25	1039	34	1076	29	9.7	3.4	1151	25
12/3/12	CS12-3	40	25µm	-21	272773	21433	56034	677837	11552	0.62	35	118	191	0.0789	1.03	2.000	1.80	0.1840	1.47	0.74	1169	20	1089	29	1116	24	6.8	2.4	1169	20
12/3/12	CS12-3	41	25µm	139	71848	5688	15625	180945	3050	0.62	9	32	50	0.0796	1.36	1.996	2.16	0.1819	1.68	0.71	1188	27	1077	33	1114	29	9.3	3.3	1188	27
12/3/12	CS12-3	42	25µm	298	224359	20002	38571	383211	7459	0.54	29	67	123	0.0893	0.85	2.884	1.72	0.2343	1.50	0.81	1410	16	1357	37	1378	26	3.8	1.5	1410	16
12/3/12	CS12-3	43	25µm	316	545884	45349	108796	4221894	47863	0.93	70	735	792	0.0852	0.80	1.028	1.68	0.0875	1.48	0.82	1321	15	541	15	718	17	59.1	24.7	541	15
12/3/12	CS12-3	44	25µm	56	229184	17439	45547	563035	10040	0.59	29	98	166	0.0773	0.79	1.864	1.66	0.1750	1.47	0.82	1129	16	1039	28	1068	22	7.9	2.7	1129	16
12/4/12	CS12-3	45	35µm	185	435002	35029	130744	1120373	15879	1.02	29	134	132	0.0804	0.68	2.402	1.47	0.2168	1.30	0.80	1206	13	1265	30	1243	21	-4.9	-1.8	1206	13
12/4/12	CS12-3	46	35µm	176	294915	22794	76881	812792	13000	0.90	20	98	108	0.0765	0.70	1.881	1.48	0.1784	1.30	0.79	1108	14	1058	25	1075	19	4.5	1.5	1108	14
12/4/12	CS12-3	47	35µm	215	117756	10701	50962	428540	3977	1.55	8	51	33	0.0905	1.68	2.899	2.28	0.2325	1.54	0.58	1436	32	1347	37	1382	34	6.2	2.5	1436	32
12/4/12	CS12-3	48	35µm	131	272445	20686	38681	401941	11849	0.49	18	48	99	0.0763	0.77	1.911	1.60	0.1819	1.40	0.80	1102	15	1077	28	1085	21	2.2	0.7	1102	15
12/4/12	CS12-3	49	35µm	419	134774	13007	41382	597375	12078	0.71	9	72	101	0.0968	1.77	1.166	2.21	0.0875	1.33	0.45	1563	33	540	14	785	24	65.4	31.2	540	14
12/4/12	CS12-3	50	35µm	915	1271364	110677	284477	5925027	107522	0.79	86	711	897	0.0863	0.72	1.123	1.53	0.0945	1.35	0.80	1344	14	582	15	764	16	56.7	23.9	582	15
12/4/12	CS12-3	51	35µm	381	66932	5304	15296	295477	3135	1.36	5	35	26	0.0794	1.30	1.857	2.21	0.1696	1.79	0.76	1183	26	1010	33	1066	29	14.6	5.3	1183	26
12/4/12	CS12-3	52	35µm	-68	590433	45767	99040	998258	25507	0.56	40	120	213	0.0767	0.58	1.951	1.41	0.1846	1.28	0.84	1113	12	1092	26	1099	19	1.8	0.6	1113	12
12/4/12	CS12-3	53	35µm	330	148179	11028	21544	217408	6224	0.50	10	26	52	0.0753	1.08	1.916	1.88	0.1847	1.54	0.74	1076	22	1093	31	1087	25	-1.6	-0.6	1076	22
12/4/12	CS12-3	54	35µm	-39	50619	3922	6757	78274	2148	0.52	3	9	18	0.0759	1.47	1.941	2.56	0.1857	2.10	0.79	1092	29	1098	42	1095	34	-0.6	-0.2	1092	29
12/4/12	CS12-3	55	35µm	-437	173901	15578	28999	237687	5752	0.59	12	29	48	0.0887	0.91	2.938	1.94	0.2404	1.71	0.85	1397	17	1389	43	1392	29	0.6	0.2	1397	17
12/4/12	CS12-3	56	35µm	214	1117740	129364	325444	3250933	40619	1.15	76	390	339	0.1141	0.86	3.454	2.34	0.2197	2.18	0.92	1865	16	1280	50	1517	36	31.4	15.6	1865	16

12/4/12	CS12-3	57	35µm	-161	695288	61345	150230	1259418	23731	0.76	47	151	198	0.0880	0.74	2.838	1.42	0.2341	1.21	0.70	1382	14	1356	30	1366	21	1.9	0.7	1382	14
12/4/12	CS12-3	58	35µm	181	164823	12894	37045	362731	6976	0.75	11	44	58	0.0766	0.94	1.999	1.86	0.1893	1.61	0.81	1111	19	1118	33	1115	25	-0.6	-0.2	1111	19
12/4/12	CS12-3	59	35µm	884	808318	76986	220024	5220605	91885	0.82	55	627	767	0.0940	0.66	0.916	1.44	0.0707	1.28	0.80	1509	13	440	11	660	14	70.8	33.3	440	11
12/4/12	CS12-3	60	35µm	1110	1342485	130374	404953	6146952	100291	0.88	91	738	837	0.0965	0.73	1.417	1.62	0.1065	1.45	0.84	1558	14	652	18	896	19	58.1	27.2	652	18
12/4/12	CS12-3	61	35µm	319	240177	18669	34711	424754	11664	0.52	16	51	97	0.0769	0.90	1.752	1.68	0.1653	1.41	0.76	1120	18	986	26	1028	21	11.9	4.1	1120	18
12/4/12	CS12-3	62	35µm	-69	497401	43764	128979	1674521	18869	1.28	34	201	157	0.0888	0.88	2.505	2.13	0.2047	1.94	0.89	1400	17	1201	42	1274	30	14.2	5.7	1400	17
12/4/12	CS12-3	63	35µm	168	376223	22147	90060	1776217	35779	0.71	26	213	299	0.0587	0.82	0.674	1.52	0.0832	1.28	0.72	558	18	515	13	523	12	7.7	1.5	515	13
12/4/12	CS12-3	64	35µm	262	1024825	100579	203810	2355926	53774	0.63	69	283	449	0.0982	0.85	2.059	1.96	0.1522	1.77	0.87	1590	16	913	30	1135	26	42.5	19.6	1590	16
12/4/12	CS12-3	65	35µm	37	180727	13791	38352	359887	7990	0.65	12	43	67	0.0780	1.22	1.899	1.91	0.1767	1.47	0.67	1146	24	1049	28	1081	25	8.5	2.9	1146	24
12/4/12	CS12-3	66	35µm	294	805442	47195	177340	3820461	81985	0.67	55	459	684	0.0588	0.76	0.621	1.54	0.0766	1.34	0.78	561	17	476	12	490	12	15.2	3.0	476	12
12/4/12	CS12-3	67	35µm	337	363782	27738	87931	845168	16121	0.75	25	101	135	0.0754	0.77	1.880	1.62	0.1809	1.43	0.81	1079	16	1072	28	1074	21	0.7	0.2	1079	16
12/4/12	CS12-3	68	35µm	351	65279	5041	8949	91262	2896	0.45	4	11	24	0.0765	1.65	1.896	2.21	0.1799	1.46	0.55	1108	33	1066	29	1080	29	3.7	1.2	1108	33
12/4/12	CS12-3	69	35µm	-291	561338	42457	84996	1186521	24627	0.69	38	142	205	0.0757	0.82	1.882	1.77	0.1803	1.57	0.84	1088	16	1069	31	1075	23	1.8	0.6	1088	16
12/4/12	CS12-3	70	35µm	59	295845	32689	105338	640663	8045	1.15	20	77	67	0.1110	0.84	4.517	1.79	0.2952	1.58	0.84	1816	15	1667	46	1734	29	8.2	3.8	1816	15
12/4/12	CS12-3	71	35µm	-36	374505	38642	62759	416498	10381	0.58	25	50	87	0.1009	1.01	4.052	1.71	0.2912	1.37	0.69	1641	19	1648	40	1645	27	-0.4	-0.2	1641	19
12/4/12	CS12-3	72	35µm	354	832577	77729	263319	2304302	33382	0.99	56	277	279	0.0927	0.74	2.549	1.88	0.1995	1.73	0.90	1481	14	1173	37	1286	27	20.8	8.8	1481	14
12/4/12	CS12-3	73	35µm	23	259142	25999	59186	395477	7177	0.79	18	47	60	0.1005	0.85	4.002	1.72	0.2891	1.49	0.81	1632	16	1637	43	1635	27	-0.3	-0.1	1632	16
12/4/12	CS12-3	74	35µm	202	673149	52547	91422	1446691	32027	0.65	46	174	267	0.0768	0.77	1.782	1.57	0.1684	1.37	0.79	1116	15	1003	25	1039	20	10.1	3.4	1116	15
12/4/12	CS12-3	75	35µm	895	108071	21432	58590	4059614	9708	6.02	7	487	81	0.1981	1.96	2.487	3.37	0.0911	2.73	0.79	2811	32	562	29	1268	48	80.0	55.7	562	29
12/4/12	CS12-3	76	35µm	19	218082	19717	63201	502395	7461	0.97	15	60	62	0.0910	0.87	2.913	1.79	0.2322	1.57	0.83	1447	17	1346	38	1385	27	7.0	2.8	1447	17
12/4/12	CS12-3	77	35µm	88	144995	8741	19857	399664	13957	0.41	10	48	116	0.0580	1.20	0.667	1.96	0.0835	1.55	0.71	529	26	517	15	519	16	2.3	0.4	517	15
12/4/12	CS12-3	78	35µm	89	2922	982	2372	2043	331	0.09	0	0	3	0.3033	7.83	3.104	9.75	0.0743	5.80	0.59	3487	121	462	51	1434	140	86.8	67.8	462	51
12/4/12	CS12-3	79	35µm	-238	637370	49435	111804	1055991	28906	0.53	43	127	241	0.0756	0.93	1.852	1.64	0.1778	1.36	0.72	1084	19	1055	26	1064	21	2.7	0.9	1084	19
12/4/12	CS12-3	80	35µm	933	1138653	118361	178277	8479111	64090	1.90	77	1018	535	0.1025	0.73	2.015	1.95	0.1427	1.81	0.91	1670	13	860	29	1121	26	48.5	23.3	1670	13
12/4/12	CS12-3	81	35µm	-102	60109	4630	14019	140020	2652	0.76	4	17	22	0.0753	1.47	1.918	2.25	0.1848	1.70	0.69	1077	29	1093	34	1087	30	-1.5	-0.5	1077	29
12/4/12	CS12-3	82	35µm	664	887087	80566	124664	2289516	56920	0.58	60	275	475	0.0894	1.13	1.540	1.90	0.1250	1.53	0.72	1412	22	760	22	947	23	46.2	19.8	1412	22
12/4/12	CS12-3	83	35µm	-234	138930	8867	21209	680256	14086	0.69	9	82	118	0.0639	1.52	0.698	2.11	0.0793	1.46	0.58	739	32	492	14	538	17	33.4	8.5	492	14
12/4/12	CS12-3	84	35µm	276	225895	18101	58337	503988	9512	0.76	15	60	79	0.0784	1.25	2.075	1.92	0.1920	1.45	0.65	1158	25	1132	30	1141	26	2.3	0.8	1158	25
12/4/12	CS12-3	85	35µm	-95	666267	51718	106437	966692	29371	0.47	45	116	245	0.0766	1.00	1.917	1.75	0.1815	1.43	0.73	1112	20	1075	28	1087	23	3.3	1.1	1112	20
12/4/12	CS12-3	86	35µm	293	561296	64096	422514	2438477	15480	2.27	38	293	129	0.1140	0.82	4.596	1.74	0.2925	1.54	0.84	1864	15	1654	45	1749	29	11.3	5.4	1864	15
12/4/12	CS12-3	87	35µm	-71	330388	25969	69010	695211	14077	0.71	22	83	117	0.0792	1.23	2.036	1.95	0.1864	1.52	0.69	1178	24	1102	31	1128	26	6.5	2.3	1178	24
12/4/12	CS12-3	88	35µm	-130	165035	13038	27623	233943	6954	0.48	11	28	58	0.0786	1.36	2.046	1.94	0.1890	1.39	0.59	1161	27	1116	28	1131	26	3.9	1.3	1161	27
12/4/12	CS12-3	89	35µm	-82	235266	18260	32502	301253	10438	0.42	16	36	87	0.0781	1.46	1.926	2.06	0.1788	1.46	0.60	1151	29	1061	28	1090	27	7.8	2.7	1151	29
12/4/12	CS12-3	90	35µm	33	336467	25894	68102	628729	14688	0.62	23	75	123	0.0763	1.02	1.947	1.83	0.1852	1.51	0.75	1103	20	1095	30	1098	24	0.7	0.2	1103	20
12/4/12	CS12-3	91	35µm	194	393096	29983	74481	774185	17775	0.63	27	93	148	0.0765	1.08	1.846	1.82	0.1750	1.47	0.72	1109	21	1040	28	1062	24	6.3	2.1	1109	21
12/4/12	CS12-3	92	35µm	73	729832	66339	212053	2084585	34541	0.87	49	250	288	0.0903	0.83	2.139	1.77	0.1720	1.57	0.84	1431	16	1023	30	1161	24	28.5	11.9	1431	16
12/4/12	CS12-3	93	35µm	329	651071	56779	127979	1090989	22359	0.70	44	131	187	0.0878	1.00	2.786	1.83	0.2301	1.54	0.77	1379	19	1335	37	1352	27	3.2	1.2	1379	19
12/4/12	CS12-3	94	35µm	131	334559	30214	113340	855513	11482	1.07	23	103	96	0.0891	0.93	2.878	1.63	0.2343	1.33	0.70	1407	18	1357	33	1376	24	3.6	1.4	1407	18
12/4/12	CS12-3	95	35µm	635	626321	51810	153605	6266367	58554	1.54	42	752	489	0.0820	0.88	0.968	1.84	0.0857	1.62	0.84	1244	17	530	16	688	18	57.4	22.9	530	16
12/4/12	CS12-3	96	35µm	65	498228	39167	81386	726116	22398	0.47	34	87	187	0.0784	1.28	1.957	2.14	0.1811	1.72	0.75	1157	25	1073	34	1101	28	7.3	2.5	1157	25
12/4/12	CS12-3	97	35µm	266	191850	14424	46247	452642	8468	0.77	13	54	71	0.0754	1.09	1.865	1.92	0.1794	1.59	0.76	1080	22	1064	31	1069	25	1.5	0.5	1080	22
12/4/12	CS12-3	98	35µm	29	229937	19647	49486	621632	8592	1.04	16	75	72	0.0852	1.10	2.487	2.12	0.2119	1.82	0.82	1320	21	1239	41	1268	30	6.2	2.3	1320	21
12/4/12	CS12-3	99	35µm	-400	106225	6422	19382	396376	10276	0.55	7	48	86	0.0591	1.50	0.682	2.03	0.0838	1.37	0.53	570	33	518	14	528	17	9.0	1.8	518	14
12/4/12	CS12-3	100	35µm	283	125050	10496	25098	212295	4696	0.65	8	25	39	0.0828	1.46	2.473	2.22	0.2166	1.68	0.68	1265	28	1264	38	1264	32	0.1	0.0	1265	28
12/4/12	CS12-3	101	35µm	104	34993	2167	5686	118011	3427	0.50	2	14	29	0.0625	3.15	0.707	3.49	0.0821	1.52	0.34	690	67	509	15	543	29	26.2	6.3	509	15
12/4/12	CS12-3	102	35µm	-88	213619	12285	38513	786638	19955	0.57	14	94	167	0.0576	1.33	0.682	2.07	0.0859	1.59	0.69	513	29	531	16	528	17	-3.5	-0.7	531	16
12/4/12	CS12-3	103	35µm	574	255856	18729	57759	547194	10939	0.72	17	66	91	0.0737	1.80	1.877	2.82	0.1849	2.16	0.73	1032	36	1094	43	1073	37	-5.9	-1.9	1032	36
12/4/12	CS12-3	104	35µm	-42	407178	36618	65683	456246	13687	0.48	28	55	114	0.0897	1.10	2.957	1.86	0.2393	1.50	0.72	1418	21	1383	37	1397	28	2.5	1.0	1418	21
12/4/12	CS12-3	105	35µm	-46	362667	36983	50304	302917	10155	0.43	25	36	85	0.1003	0.94	4.076	1.69	0.2947	1.41	0.74	1630	17	1665	41	1649	27	-2.1	-0.9	1630	17
12/4/12	CS12-3	106	35µm	372	190989	17347	40717	307586	6574	0.67	13	37	55	0.0897	1.35	2.915	2.14	0.2359	1.65	0.70	1419	26	1365	41	1386	32	3.8	1.5	1419	26
12/4/12	CS12-3	107	35µm	520	997963	93090	228213	3183235	57907	0.79	68	382	483	0.0936	0.69	1.815	1.56	0.1407	1.40	0.84	1501	13	849	22	1051	20	43.4	19.3	1501	13
12/4/12	CS12-3	108	35µm	256	509422	40365	83840	782081	22202	0.51	35	94	185	0.0797	1.19	2.018	1.94	0.1837	1.53	0.70	1190	24	1087	30	1122	26	8.7	3.1	1190	24
12/4/12	CS12-3	109	35µm	341	580646	43956	85506	809734	25012	0.47	39	97	209	0.0758	1.00	1.948	1.68	0.1863	1.35	0.69	1091	20	1102	27	1098	22	-1.0	-0.4	1091	20
12/4/12	CS12-3	110	35µm	580	847115	63068	176375	2249652	38060	0.85	57	270	318	0.0744	0.95	1.845	1.78	0.1798	1.51	0.78	1053	19	1066	30	1062	23	-1.2	-0.4	1053	19
12/4/12	CS12-3	111	35µm	-111	348457	26601	52559	495344	15549	0.46	24	59	130	0.0761	0.84	1.917	1.47	0.1828	1.21	0.65	1098	17	1082	24	1087	19	1.4	0.5	1098	17
12/4/12	CS12-3	112	35µm	-58	135436	11897	28847	211609	4504	0.68	9	25	38	0.0885	1.04	2.971	1.97	0.2438	1.68	0.80	1392	20	1406	42	1400	30	-1.0	-0.4	1392	20
12/4/12	CS12-3	113	35µm	-81	423227	32308	65835	595104	18431	0.46	29	71	154	0.0756	1.09	1.944	1.93	0.1866	1.60	0.76	1085	22	1103	32	1096	26	-1.7	-0.6	1085	22
12/4/12	CS12-3	114	35µm	298	454822	34845	100018	943194	20097	0.68	31	113	168	0.0768	1.10	1.938	1.75	0.1831	1.37	0.66	1116	22	1084	27	1094	23	2.9	1.0	1116	22
12/4/12	CS12-3	115	35µm	523	269605	23106	44266	543139	11287	0.69	18	65	94	0.0832	1.03	2.227	1.85	0.1942	1.53	0.76	1274	20	1144	32	1190	26	10.2	3.8	1274	20
12/4/12	CS12-3	116	35µm	-242	292478	23692	44892	598458	13182	0.65	20	72	110	0.0800	1.16	1.988	1.83	0.1803	1.41	0.66	1198	23	1068	28	1111	24	10.8	3.9	1198	23
12/4/12	CS12-3	117	35µm	109	230807	13481	64811	1307826	22351	0.84	16	157	186	0.0580	1.22	0.674	2.04	0.0844	1.63	0.73	529	27	522	16	523	17	1.4	0.2	522	16
12/4/12	CS12-3	118	35µm	288	414508	43318	61658	359063	10834	0.48	28	43	90	0.1046	1.19	4.484	1.96	0.3112	1.56	0.72	1707	22	1746	47	1728	32	-2.3	-1.1	1707	22
12/4/12	CS12-3	119	35µm	63	361194	28477	95457	1141850	15564	1.06	24	137	130	0.0788	1.14	2.045	1.89	0.1882	1.51	0.71	1168	23	1112	31	1130	25	4.8	1.7	1168	23
12/4/12	CS12-3	120	35µm	469	279334	21617	46415	431058	11691	0.53	19	52	98	0.0780	1.38	2.063	1.99	0.1918	1.44	0.61	1148	27	1131	30	1136	27	1.5	0.5	1148	27
12/4/12	CS12-3	121	35µm	237	354689	28586	58563	492123	13896	0.51	24	59	116	0.0790	0.82	2.270	1.68	0.2084	1.47	0.81	1173	16	1220	33	1203	23	-4.0	-1.4	1173	16
12/4/12	CS12-3	122	35µm	430	73766	6684	11960	91773	2496	0.53	5	11	21	0.0902	1.79	3.028	2.51	0.2436	1.76	0.63	1430	34	1405	44	1415	38	1.7	0.7	1430	34
12/4/12	CS12-3	123	35µm	-170	60379	4916	10056	96819	2655	0.52	4	12	22	0.0815	2.98	2.086	3.72	0.1858	2.22	0.56	1233	59	1099	45	1144	50	10.9	4.0	1233	59
12/4/12	CS12-3	124	35µm	20	313096	23953	52020	568455	15436	0.53	21	68	129	0.0760	1.05	1.772	1.92	0.1693	1.60	0.78	1094	21	1008	30	1035	25	7.9	2.6	1094	21
12/4/12	CS12-3	125	35µm	127	502503	46453	122545	892634	18092	0.71	34	107	151	0.0915	0.90	2.894	1.64	0.2294	1.37	0.74	1457	17	1331	33	1380	24	8.6	3.5	1457	17
12/4/12	CS12-3	126	35µm	405	325167	28404	48292	345885	10744	0.46	22	42	90	0.0869	1.08	2.942	1.77	0.2456	1.40	0.68	1359	21	1416	35	1393	26	-4.2	-1.7	1359	21

12/4/12	CS12-3	127	35µm	256	294518	22688	55828	516174	13049	0.57	20	62	109	0.0775	1.26	1.974	1.97	0.1847	1.51	0.67	1135	25	1093	30	1107	26	3.8	1.3	1135	25
12/4/12	CS12-3	128	35µm	373	249580	23718	84157	562181	8019	1.01	17	67	67	0.0933	1.22	3.331	1.94	0.2591	1.51	0.69	1494	23	1485	40	1488	30	0.6	0.2	1494	23
12/4/12	CS12-3	129	35µm	-197	417041	34308	84067	664913	15705	0.61	28	80	131	0.0809	1.09	2.426	1.95	0.2175	1.62	0.77	1220	21	1268	37	1250	28	-4.0	-1.4	1220	21
12/4/12	CS12-3	130	35µm	-98	160609	12389	24439	219688	7049	0.45	11	26	59	0.0773	1.04	1.956	1.78	0.1836	1.45	0.72	1129	21	1086	29	1100	24	3.8	1.3	1129	21
12/4/12	CS12-3	131	35µm	-26	51513	3094	7423	152246	4968	0.44	3	18	41	0.0597	1.98	0.695	2.77	0.0845	1.94	0.65	594	43	523	19	536	23	12.0	2.5	523	19
12/4/12	CS12-3	132	35µm	432	235815	18651	37548	318550	9984	0.46	16	38	83	0.0791	1.06	2.082	1.85	0.1911	1.52	0.74	1174	21	1127	31	1143	25	3.9	1.4	1174	21
12/4/12	CS12-3	133	35µm	-55	109752	8398	23276	207812	4659	0.64	7	25	39	0.0757	1.38	2.001	2.15	0.1918	1.65	0.70	1087	28	1131	34	1116	29	-4.0	-1.4	1087	28
12/4/12	CS12-3	134	35µm	66	88124	10148	23733	307620	3611	1.23	6	37	30	0.1156	3.03	3.131	3.74	0.1965	2.18	0.54	1889	55	1156	46	1440	56	38.8	19.7	1889	55
12/4/12	CS12-3	135	35µm	197	493958	38414	123587	1069133	21068	0.73	33	128	176	0.0772	1.00	2.013	1.79	0.1893	1.49	0.75	1126	20	1117	30	1120	24	0.8	0.2	1126	20
12/4/12	CS12-1	1	25µm	98	200357	16786	59517	576104	8345	0.84	38	163	194	0.0831	1.34	2.265	2.06	0.1978	1.56	0.68	1272	26	1163	33	1201	29	8.5	3.2	1272	26
12/4/12	CS12-1	2	25µm	185	778083	140412	123801	529920	12490	0.52	147	150	290	0.1824	1.17	12.689	1.94	0.5046	1.55	0.72	2675	19	2634	67	2657	36	1.6	0.9	2675	19
12/4/12	CS12-1	3	25µm	-1	179854	21037	62618	353338	4387	0.98	34	100	102	0.1150	1.34	5.297	2.26	0.3341	1.82	0.76	1880	24	1858	58	1868	38	1.2	0.5	1880	24
12/4/12	CS12-1	4	25µm	9	177167	20040	56979	339496	4524	0.92	33	96	105	0.1138	1.52	5.072	2.18	0.3233	1.56	0.62	1861	27	1806	49	1831	36	3.0	1.4	1861	27
12/4/12	CS12-1	5	25µm	-137	30189	2518	12161	106967	1147	1.14	6	30	27	0.0828	1.84	2.485	2.95	0.2178	2.30	0.75	1264	36	1270	53	1268	42	-0.5	-0.2	1264	36
12/4/12	CS12-1	6	25µm	75	114150	9392	40434	359741	4474	0.98	22	102	104	0.0822	1.22	2.374	2.30	0.2095	1.95	0.82	1250	24	1226	44	1235	32	1.9	0.7	1250	24
12/4/12	CS12-1	7	25µm	14	24482	2077	12568	113018	924	1.49	5	32	21	0.0821	1.93	2.469	2.99	0.2181	2.29	0.73	1249	38	1272	53	1263	42	-1.9	-0.7	1249	38
12/4/12	CS12-1	8	25µm	29	168923	18884	72061	416861	4380	1.16	32	118	102	0.1121	1.30	4.846	2.08	0.3136	1.63	0.71	1834	24	1758	50	1793	34	4.1	1.9	1834	24
12/4/12	CS12-1	9	25µm	-48	103066	9199	20248	150960	3592	0.51	19	43	84	0.0896	1.41	2.916	2.40	0.2362	1.94	0.77	1416	27	1367	48	1386	36	3.5	1.4	1416	27
12/4/12	CS12-1	10	25µm	52	350664	28525	129339	1104317	13684	0.98	66	313	318	0.0814	1.02	2.360	1.77	0.2103	1.45	0.73	1232	20	1230	32	1231	25	0.2	0.0	1232	20
12/4/12	CS12-1	11	25µm	89	565862	67623	51830	318429	13992	0.28	107	90	325	0.1164	1.35	5.466	2.26	0.3406	1.81	0.75	1902	24	1890	59	1895	38	0.7	0.3	1902	24
12/4/12	CS12-1	12	25µm	39	99777	9210	32636	249651	3234	0.94	19	71	75	0.0918	1.24	3.156	2.07	0.2496	1.65	0.73	1462	24	1436	42	1446	31	1.8	0.7	1462	24
12/4/12	CS12-1	13	25µm	-31	75422	6693	13734	112009	2695	0.51	14	32	63	0.0877	1.19	2.749	1.96	0.2274	1.57	0.72	1376	23	1321	37	1342	29	4.0	1.6	1376	23
12/4/12	CS12-1	14	25µm	88	64356	6015	18131	132574	2097	0.77	12	38	49	0.0928	1.42	3.240	2.39	0.2534	1.92	0.76	1483	27	1456	50	1467	36	1.8	0.7	1483	27
12/4/12	CS12-1	15	25µm	4424	716157	135268	306836	2860277	33053	1.06	135	811	769	0.1853	1.18	4.651	2.02	0.1821	1.63	0.75	2701	19	1079	32	1758	33	60.1	38.7	2701	19
12/4/12	CS12-1	16	25µm	18	19873	1685	98	1406	795	0.02	4	0	18	0.0838	2.04	2.429	3.05	0.2104	2.26	0.71	1287	40	1231	51	1251	43	4.4	1.6	1287	40
12/4/12	CS12-1	17	25µm	8	172565	14015	28364	255547	6798	0.46	33	72	158	0.0809	1.07	2.304	1.90	0.2068	1.57	0.76	1218	21	1212	35	1214	27	0.5	0.2	1218	21
12/4/12	CS12-1	18	25µm	-16	246110	27350	75106	440799	6183	0.87	46	125	144	0.1123	0.99	5.063	1.90	0.3272	1.62	0.80	1837	18	1825	51	1830	32	0.6	0.3	1837	18
12/4/12	CS12-1	19	25µm	-19	323809	26488	61675	527186	12469	0.52	61	150	290	0.0819	1.00	2.419	1.89	0.2144	1.61	0.79	1242	20	1252	36	1248	27	-0.8	-0.3	1242	20
12/4/12	CS12-1	20	25µm	95	288236	23475	164609	1342100	11169	1.47	54	381	260	0.0817	1.18	2.395	2.01	0.2129	1.63	0.75	1237	23	1244	37	1241	28	-0.6	-0.2	1237	23
12/4/12	CS12-1	21	25µm	376	908536	96458	260941	2201012	31912	0.84	171	624	742	0.1075	1.00	3.490	1.70	0.2356	1.37	0.70	1757	18	1364	34	1525	26	22.4	10.6	1757	18
12/4/12	CS12-1	22	25µm	141	97061	7553	23575	248333	4312	0.70	18	70	100	0.0771	1.42	1.959	2.18	0.1843	1.66	0.69	1124	28	1091	33	1102	29	3.0	1.0	1124	28
12/4/12	CS12-1	23	25µm	-245	181905	20159	24168	146518	5402	0.33	34	42	126	0.1048	1.21	4.139	2.28	0.2867	1.94	0.82	1710	22	1625	55	1662	37	5.0	2.2	1710	22
12/4/12	CS12-1	24	25µm	181	220975	18370	44734	432994	8855	0.60	42	123	206	0.0827	0.99	2.312	1.82	0.2028	1.52	0.77	1262	19	1190	33	1216	25	5.7	2.1	1262	19
12/4/12	CS12-1	25	25µm	79	134174	11788	62715	573985	5269	1.33	25	163	123	0.0899	1.20	2.555	2.02	0.2061	1.62	0.74	1424	23	1208	36	1288	29	15.2	6.2	1424	23
12/4/12	CS12-1	26	25µm	267	278556	31661	56124	292461	7171	0.50	53	83	167	0.1125	1.46	5.011	2.48	0.3231	2.00	0.77	1841	27	1805	63	1821	41	2.0	0.9	1841	27
12/4/12	CS12-1	27	25µm	-224	93736	10773	35047	203118	2346	1.06	18	58	55	0.1135	1.23	5.226	2.26	0.3342	1.89	0.80	1856	22	1858	61	1857	38	-0.1	-0.1	1856	22
12/4/12	CS12-1	28	25µm	150	80212	7518	28548	190726	2672	0.87	15	54	62	0.0921	1.42	3.183	2.33	0.2507	1.85	0.75	1470	27	1442	48	1453	35	1.9	0.8	1470	27
12/4/12	CS12-1	29	25µm	-289	231426	18829	67566	624818	9190	0.83	44	177	214	0.0804	1.09	2.306	1.97	0.2082	1.64	0.78	1206	21	1219	36	1214	28	-1.1	-0.4	1206	21
12/4/12	CS12-1	30	25µm	78	152705	13740	30603	227203	5011	0.55	29	64	117	0.0908	1.15	3.131	1.94	0.2502	1.56	0.73	1443	22	1440	40	1440	29	0.2	0.1	1443	22
12/4/12	CS12-1	31	25µm	111	127606	10713	502	3180	5125	0.01	24	1	119	0.0834	1.16	2.389	2.24	0.2078	1.92	0.82	1278	23	1217	43	1239	32	4.8	1.8	1278	23
12/4/12	CS12-1	32	25µm	550	591855	79595	79042	457573	16099	0.35	112	130	374	0.1303	1.44	5.645	2.15	0.3143	1.60	0.66	2102	25	1762	49	1923	37	16.2	8.4	2102	25
12/4/12	CS12-1	33	25µm	480	369191	29821	9472	85707	14333	0.07	70	24	333	0.0811	1.11	2.368	1.90	0.2118	1.54	0.73	1224	22	1239	35	1233	27	-1.2	-0.4	1224	22
12/4/12	CS12-1	34	25µm	51	258707	49140	34654	141941	4024	0.43	49	40	94	0.1895	1.30	14.078	2.29	0.5391	1.89	0.78	2738	21	2780	85	2755	43	-1.5	-0.9	2738	21
12/4/12	CS12-1	35	25µm	102	303380	28847	52059	534669	12097	0.54	57	152	281	0.0956	0.80	2.707	1.73	0.2054	1.53	0.84	1540	15	1204	34	1330	25	21.8	9.5	1540	15
12/4/12	CS12-1	36	25µm	145	666620	62723	136995	1011419	20831	0.59	126	287	484	0.0925	1.10	3.440	2.04	0.2698	1.72	0.80	1478	21	1540	47	1513	32	-4.2	-1.7	1478	21
12/4/12	CS12-1	37	25µm	222	57208	6467	6017	25665	2362	0.13	11	7	55	0.1143	1.81	3.094	2.42	0.1965	1.62	0.58	1868	33	1156	34	1431	37	38.1	19.2	1868	33
12/4/12	CS12-1	38	25µm	304	257586	25437	70643	837563	10793	0.95	49	238	251	0.0967	0.91	2.633	2.14	0.1976	1.94	0.89	1562	17	1162	41	1310	31	25.6	11.3	1562	17
12/4/12	CS12-1	39	25µm	12	212401	19434	47256	350923	6800	0.63	40	100	158	0.0901	1.24	3.235	2.00	0.2606	1.57	0.71	1427	24	1493	42	1466	31	-4.6	-1.9	1427	24
12/4/12	CS12-1	40	25µm	743	1227136	139218	275572	1858470	40296	0.56	231	527	937	0.1122	0.91	3.973	2.33	0.2569	2.15	0.91	1836	17	1474	56	1629	37	19.7	9.5	1836	17
12/4/12	CS12-1	41	25µm	67	231527	18924	42608	377505	9232	0.50	44	107	215	0.0816	1.22	2.375	2.05	0.2113	1.64	0.74	1235	24	1236	37	1235	29	0.0	0.0	1235	24
12/4/12	CS12-1	42	25µm	-60	108719	9806	9326	67560	3484	0.24	21	19	81	0.0902	1.25	3.216	2.33	0.2587	1.97	0.81	1430	24	1483	52	1461	36	-3.8	-1.5	1430	24
12/4/12	CS12-1	44	25µm	835	958514	116249	486744	4414776	39615	1.36	181	1252	921	0.1210	0.96	3.322	1.90	0.1992	1.64	0.82	1971	17	1171	35	1486	29	40.6	21.2	1971	17
12/4/12	CS12-1	45	25µm	124	430938	49788	107026	572905	10141	0.69	81	163	236	0.1156	1.11	5.622	2.03	0.3529	1.70	0.79	1889	20	1949	57	1919	34	-3.2	-1.5	1889	20
12/4/12	CS12-1	46	25µm	69	233895	21725	52599	381166	7311	0.64	44	108	170	0.0926	1.18	3.351	2.15	0.2627	1.80	0.79	1479	22	1504	48	1493	33	-1.7	-0.7	1479	22
12/4/12	CS12-1	47	25µm	38	131397	10800	56692	488677	5013	1.19	25	139	117	0.0824	1.05	2.455	1.87	0.2163	1.55	0.76	1254	20	1262	35	1259	27	-0.6	-0.3	1254	20
12/4/12	CS12-1	49	25µm	18	141831	11681	63007	521851	5451	1.17	27	148	127	0.0823	1.12	2.415	1.86	0.2130	1.48	0.71	1252	22	1245	34	1247	26	0.6	0.2	1252	22
12/4/12	CS12-1	51	25µm	-131	396782	36503	68829	491408	12270	0.49	75	139	285	0.0912	1.10	3.398	2.26	0.2703	1.98	0.85	1451	21	1542	54	1504	35	-6.3	-2.6	1451	21
12/4/12	CS12-1	52	25µm	-252	69933	5686	9384	83571	2787	0.37	13	24	65	0.0816	1.46	2.354	2.30	0.2093	1.77	0.71	1236	29	1225	39	1229	32	0.9	0.3	1236	29
12/4/12	CS12-1	53	25µm	-33	351654	39770	99006	570786	8520	0.82	66	162	198	0.1133	0.93	5.382	1.80	0.3447	1.55	0.80	1853	17	1909	51	1882	30	-3.1	-1.5	1853	17
12/4/12	CS12-1	55	25µm	259	46256	3949	9189	81259	1872	0.53	9	23	44	0.0854	1.50	2.420	2.66	0.2056	2.20	0.80	1325	29	1205	48	1249	38	9.0	3.5	1325	29
12/4/12	CS12-1	56	25µm	536	322537	29329	93704	688827	10412	0.81	61	195	242	0.0925	1.01	3.186	1.97	0.2500	1.69	0.82	1477	19	1439	44	1454	30	2.6	1.0	1477	19
12/4/12	CS12-1	57	25µm	97	168580	15819	27995	198016	5258	0.46	32	56	122	0.0938	1.18	3.362	2.03	0.2602	1.66	0.76	1503	22	1491	44	1496	31	0.8	0.3	1503	22
12/4/12	CS12-1	58	25µm	34	137365	15681	57874	328341	3433	1.17	26	93	80	0.1123	1.29	5.182	2.09	0.3350	1.64	0.72	1836	23	1863	53	1850	35	-1.4	-0.7	1836	23
12/4/12	CS12-1	59	25µm	146	83780	7881	16691	118252	2774	0.52	16	34	65	0.0914	1.45	3.254	2.28	0.2582	1.76	0.71	1456	28	1481	46	1470	35	-1.7	-0.7	1456	28
12/4/12	CS12-1	60	25µm	374	401304	33043	168027	1438242	15435	1.14	76	408	359	0.0825	1.04	2.463	1.84	0.2165	1.52	0.75	1258	20	1263	35	1261	26	-0.4	-0.2	1258	20
12/4/12	CS12-1	61	25µm	39	145294	13298	27999	202811	4910	0.50	27	58	114	0.0899	1.40	3.134	2.26	0.2531	1.77	0.73	1423	27	1454	46	1441	34	-2.2	-0.9	1423	27
12/4/12	CS12-1	62	25µm	443	363069	30346	132234	1148991	18590	0.75	68	326	432	0.0831	1.14	1.860	1.94	0.1624	1.58	0.74	1272	22	970	28	1067	25	23.7	9.1	1272	22
12/4/12	CS12-1	63	25µm	690	1340527	149254	485592	3179926	42344	0.92	253	902	985	0.1103	1.06	4.047	1.85	0.2662	1.51	0.74	1805	19	1521	41	1644	30	15.7	7.4	1805	19
12/4/12	CS12-1	64	25µm	164	257465	24033	84432	633453	8289	0.93	49	180	193	0.0923	1.06	3.261	2.07	0.2564	1.78	0.82	1473	20	1472	47	1472	32	0.1	0.0	1473	20

12/4/12	CS12-1	65	25µm	1126	432843	49932	172811	1225495	16280	0.92	82	348	379	0.1167	2.97	3.569	3.40	0.2219	1.66	0.41	1906	53	1292	39	1543	53	32.2	16.2	1906	53
12/4/12	CS12-1	66	25µm	299	108699	8554	28482	257200	4056	0.77	21	73	94	0.0789	1.32	2.403	2.11	0.2210	1.65	0.71	1169	26	1287	38	1243	30	-10.1	-3.5	1169	26
12/4/12	CS12-1	67	25µm	359	489399	41092	82369	749005	19327	0.47	92	212	449	0.0852	1.49	2.424	2.25	0.2064	1.68	0.68	1321	29	1209	37	1250	32	8.5	3.2	1321	29
12/4/12	CS12-1	68	25µm	252	896940	99879	27463	179859	35004	0.06	169	51	814	0.1107	0.99	3.293	1.91	0.2159	1.63	0.80	1811	18	1260	37	1479	29	30.4	14.8	1811	18
12/4/12	CS12-1	69	25µm	144	193356	17842	26114	194544	6777	0.35	36	55	158	0.0931	1.55	3.098	2.42	0.2415	1.86	0.72	1489	29	1395	46	1432	37	6.4	2.6	1489	29
12/4/12	CS12-1	70	25µm	184	282949	26580	98004	653466	9630	0.83	53	185	224	0.0926	1.42	3.130	2.32	0.2453	1.84	0.74	1480	27	1414	47	1440	35	4.4	1.8	1480	27
12/4/12	CS12-1	71	25µm	-86	88706	7972	18560	127315	2874	0.54	17	36	67	0.0902	1.12	3.214	2.19	0.2586	1.88	0.83	1430	21	1483	50	1461	33	-3.7	-1.5	1430	21
12/4/12	CS12-1	72	25µm	59	126315	11316	10339	106953	5298	0.25	24	30	123	0.0899	1.25	2.495	2.27	0.2014	1.89	0.79	1423	24	1183	41	1271	32	16.9	6.9	1423	24
12/4/12	CS12-1	73	25µm	106	216553	24010	87038	513298	5311	1.18	41	146	123	0.1095	1.22	5.090	2.00	0.3374	1.59	0.72	1791	22	1874	52	1834	33	-4.7	-2.2	1791	22
12/4/12	CS12-1	74	25µm	505	874606	103257	93849	557979	23161	0.29	165	158	539	0.1166	1.14	5.056	1.94	0.3146	1.57	0.74	1905	20	1763	48	1829	32	7.5	3.6	1905	20
12/4/12	CS12-1	75	25µm	-278	296207	31526	22602	166499	8725	0.23	56	47	203	0.1027	1.21	4.098	2.14	0.2895	1.76	0.78	1674	22	1639	51	1654	34	2.1	0.9	1674	22
12/4/12	CS12-1	76	25µm	372	400664	44123	60597	314155	11265	0.34	76	89	262	0.1127	1.70	4.532	3.20	0.2918	2.72	0.83	1843	31	1651	79	1737	52	10.5	5.0	1843	31
12/4/12	CS12-1	77	25µm	192	758598	81952	117910	745042	23894	0.38	143	211	556	0.1062	1.28	3.941	2.38	0.2693	2.01	0.81	1735	23	1537	55	1622	38	11.4	5.2	1735	23
12/4/12	CS12-1	78	25µm	402	113292	10698	36001	279521	3754	0.91	21	79	87	0.0934	1.41	3.305	2.41	0.2567	1.95	0.77	1496	27	1473	51	1482	37	1.5	0.6	1496	27
12/4/12	CS12-1	79	25µm	50	296949	24753	62282	550929	11379	0.59	56	156	265	0.0812	1.35	2.484	2.21	0.2220	1.75	0.74	1226	27	1293	41	1268	32	-5.4	-2.0	1226	27
12/4/12	CS12-1	80	25µm	-228	341601	31808	58870	451859	10979	0.50	64	128	255	0.0931	1.35	3.317	2.10	0.2586	1.61	0.69	1490	26	1482	42	1485	32	0.5	0.2	1490	26
12/4/12	CS12-1	81	25µm	102	240222	20553	3821	19094	9217	0.03	45	5	214	0.0880	1.63	2.588	2.67	0.2133	2.11	0.76	1383	31	1246	48	1297	38	9.9	3.9	1383	31
12/4/12	CS12-1	82	25µm	123	701355	81187	272971	1551969	19312	0.98	132	440	449	0.1147	1.31	4.860	1.96	0.3075	1.46	0.64	1875	24	1728	44	1795	33	7.8	3.7	1875	24
12/4/12	CS12-1	83	25µm	-115	166025	18651	32465	183125	4111	0.54	31	52	96	0.1117	1.57	5.174	2.54	0.3361	2.00	0.75	1827	28	1868	65	1848	42	-2.2	-1.0	1827	28
12/4/12	CS12-1	84	25µm	96	146393	13251	21681	155601	4643	0.41	28	44	108	0.0912	1.15	3.306	2.19	0.2630	1.87	0.81	1451	22	1505	50	1483	34	-3.7	-1.5	1451	22
12/4/12	CS12-1	85	25µm	-40	59292	5447	13440	96552	1868	0.63	11	27	43	0.0906	1.31	3.333	2.29	0.2670	1.88	0.78	1438	25	1526	51	1489	35	-6.1	-2.5	1438	25
12/4/12	CS12-1	86	25µm	4	154906	12807	40728	328134	6369	0.63	29	93	148	0.0818	1.21	2.303	2.16	0.2044	1.79	0.78	1240	24	1199	39	1213	30	3.4	1.2	1240	24
12/4/12	CS12-1	87	25µm	39	76397	7359	17782	125488	2493	0.61	14	36	58	0.0938	1.20	3.362	2.51	0.2600	2.20	0.86	1505	23	1490	58	1496	38	1.0	0.4	1505	23
12/4/12	CS12-1	89	25µm	107	84971	7411	15419	104748	3082	0.41	16	30	72	0.0877	1.71	2.873	2.55	0.2378	1.89	0.69	1375	33	1375	47	1375	38	0.0	0.0	1375	33
12/4/12	CS12-1	90	25µm	62	156941	18343	48195	285415	3690	0.94	30	81	86	0.1167	1.18	5.679	2.21	0.3530	1.87	0.81	1907	21	1949	63	1928	37	-2.2	-1.1	1907	21
12/4/12	CS12-1	91	25µm	265	580861	48194	85764	807157	22290	0.44	110	229	518	0.0840	1.08	2.515	1.87	0.2171	1.52	0.74	1293	21	1267	35	1276	27	2.0	0.7	1293	21
12/4/12	CS12-1	92	25µm	276	168427	20125	57771	338560	4225	0.98	32	96	98	0.1167	1.11	5.452	2.00	0.3390	1.66	0.78	1906	20	1882	54	1893	34	1.3	0.6	1906	20
12/4/12	CS12-1	93	25µm	-25	1145632	139172	96612	484103	25413	0.23	216	137	591	0.1216	1.22	6.454	2.09	0.3851	1.70	0.75	1980	22	2100	61	2040	36	-6.1	-3.0	1980	22
12/4/12	CS12-1	94	25µm	150	137959	12650	24335	185211	5046	0.45	26	53	117	0.0912	1.23	3.014	2.62	0.2398	2.31	0.87	1451	24	1386	57	1411	39	4.5	1.8	1451	24
12/4/12	CS12-1	95	25µm	285	73224	5900	17500	152454	2851	0.65	14	43	66	0.0793	1.20	2.359	2.17	0.2158	1.80	0.79	1180	24	1260	41	1230	30	-6.8	-2.4	1180	24
12/4/12	CS12-1	96	25µm	77	414547	34417	205772	1749024	16964	1.26	78	496	394	0.0830	0.99	2.337	1.92	0.2042	1.64	0.81	1270	19	1198	36	1224	27	5.7	2.1	1270	19
12/4/12	CS12-1	97	25µm	308	114228	10326	28743	204092	3592	0.69	22	58	84	0.0910	1.23	3.388	1.92	0.2701	1.47	0.67	1447	23	1541	40	1502	30	-6.5	-2.6	1447	23
12/4/12	CS12-1	98	25µm	337	658961	75181	159834	877072	17935	0.60	124	249	417	0.1132	0.98	4.937	1.91	0.3164	1.64	0.81	1851	18	1772	51	1809	32	4.3	2.0	1851	18
12/4/12	CS12-1	99	25µm	160	433189	35664	34098	313068	16605	0.23	82	89	386	0.0819	0.99	2.482	1.75	0.2200	1.45	0.74	1242	19	1282	34	1267	25	-3.2	-1.2	1242	19
12/4/12	CS12-1	100	25µm	113	88841	7275	26183	223449	3435	0.79	17	63	80	0.0815	1.69	2.416	2.47	0.2151	1.81	0.67	1234	33	1256	41	1247	35	-1.8	-0.7	1234	33
12/4/12	CS12-1	101	25µm	312	162984	13220	22595	189593	6186	0.37	31	54	144	0.0799	0.91	2.421	1.93	0.2200	1.71	0.85	1194	18	1282	40	1249	27	-7.4	-2.6	1194	18
12/4/12	CS12-1	102	25µm	-330	113215	9959	35868	278023	3736	0.91	21	79	87	0.0871	1.36	3.033	2.48	0.2528	2.07	0.81	1362	26	1453	54	1416	37	-6.7	-2.6	1362	26
12/4/12	CS12-1	103	25µm	-132	587477	99849	60527	243762	10035	0.30	111	69	233	0.1680	1.13	11.396	1.87	0.4921	1.49	0.71	2538	19	2580	63	2556	34	-1.7	-0.9	2538	19
12/4/12	CS12-1	104	25µm	214	137766	12719	22747	159421	4355	0.45	26	45	101	0.0920	1.16	3.368	2.14	0.2656	1.79	0.80	1468	22	1518	48	1497	33	-3.5	-1.4	1468	22
12/4/12	CS12-1	106	25µm	250	474057	45732	154199	1180431	18042	0.80	89	335	420	0.0960	1.56	2.934	2.47	0.2218	1.91	0.73	1548	29	1291	45	1391	37	16.6	7.1	1548	29
12/4/12	CS12-1	107	25µm	-128	117902	9446	41311	368534	4635	0.97	22	105	108	0.0805	1.13	2.353	1.99	0.2120	1.64	0.76	1210	22	1240	37	1228	28	-2.5	-0.9	1210	22
12/4/12	CS12-1	108	25µm	260	83393	7705	20529	151296	2685	0.69	16	43	62	0.0922	1.25	3.309	2.10	0.2606	1.68	0.74	1471	24	1493	45	1483	32	-1.5	-0.6	1471	24
12/4/12	CS12-1	109	25µm	1222	864458	87640	158675	1434177	43305	0.40	163	407	1007	0.1008	1.10	2.364	2.06	0.1701	1.74	0.80	1639	20	1013	33	1232	29	38.2	17.8	1639	20
12/4/12	CS12-1	110	25µm	15	91546	8408	28368	203209	2925	0.85	17	58	68	0.0923	1.07	3.336	2.05	0.2622	1.75	0.81	1474	20	1501	47	1489	32	-1.8	-0.8	1474	20
12/4/12	CS12-1	111	25µm	-266	150333	13643	39126	277782	4751	0.71	28	79	110	0.0911	1.10	3.344	2.07	0.2662	1.76	0.81	1449	21	1522	47	1491	32	-5.0	-2.0	1449	21
12/4/12	CS12-1	112	25µm	418	44967	3631	13205	114017	1694	0.82	8	32	39	0.0815	1.66	2.463	2.60	0.2192	2.00	0.73	1234	32	1278	46	1261	37	-3.6	-1.3	1234	32
12/4/12	CS12-1	113	25µm	505	1217139	114678	430599	3552204	45048	0.96	230	1008	1048	0.0922	1.22	2.938	2.28	0.2313	1.93	0.81	1471	23	1342	46	1392	34	8.8	3.6	1471	23
12/4/12	CS12-1	114	25µm	221	85674	8123	16103	123713	2796	0.54	16	35	65	0.0937	1.62	3.328	2.75	0.2579	2.22	0.78	1501	31	1479	59	1488	42	1.5	0.6	1501	31
12/4/12	CS12-1	115	25µm	-292	73801	6755	15485	110935	2342	0.58	14	31	54	0.0916	1.67	3.305	2.44	0.2619	1.78	0.67	1459	32	1499	47	1482	37	-2.8	-1.2	1459	32
12/4/12	CS12-1	116	25µm	218	133989	12093	53896	480953	5724	1.03	25	136	133	0.0901	1.12	2.494	2.16	0.2008	1.85	0.82	1428	21	1180	40	1270	31	17.4	7.1	1428	21
12/4/12	CS12-1	117	25µm	-86	512620	41858	117120	1024499	19968	0.63	97	291	464	0.0811	1.15	2.439	1.91	0.2181	1.52	0.72	1225	23	1272	35	1254	27	-3.9	-1.4	1225	23
12/4/12	CS12-1	118	25µm	636	786264	70286	229013	2424158	38283	0.77	148	688	890	0.0892	1.09	2.125	1.86	0.1728	1.51	0.73	1409	21	1028	29	1157	25	27.1	11.2	1409	21
12/4/12	CS12-1	119a	25µm	191	473674	54009	170870	960243	10865	1.08	89	272	253	0.1136	1.40	5.725	2.45	0.3656	2.01	0.79	1858	25	2009	69	1935	42	-8.1	-3.8	1858	25
12/4/12	CS12-1	119b	25µm	10	77057	7172	27604	200903	2462	1.00	15	57	57	0.0925	1.19	3.354	2.02	0.2630	1.63	0.74	1479	23	1505	44	1494	31	-1.8	-0.8	1479	23
12/4/12	CS12-1	120	25µm	122	188430	19924	53797	329339	6389	0.63	36	93	149	0.1056	0.91	3.657	2.39	0.2513	2.21	0.92	1725	17	1445	57	1562	37	16.2	7.5	1725	17
12/4/12	CS12-1	121	25µm	112	59817	4918	7845	72938	2418	0.37	11	21	56	0.0819	1.40	2.396	2.36	0.2122	1.91	0.76	1244	27	1240	43	1241	33	0.3	0.1	1244	27
12/4/12	CS12-1	122	25µm	89	193660	19847	34146	222791	5548	0.49	37	63	129	0.1016	1.34	4.183	2.14	0.2986	1.67	0.71	1654	25	1684	49	1671	35	-1.8	-0.8	1654	25
12/4/12	CS12-1	123	25µm	68	637633	74255	589723	3840550	16514	2.84	120	1090	384	0.1164	1.13	5.228	1.99	0.3258	1.64	0.76	1902	20	1818	52	1857	33	4.4	2.1	1902	20
12/4/12	CS12-1	124	25µm	341	164822	18635	20776	122060	3968	0.38	31	35	92	0.1138	1.33	5.615	2.24	0.3581	1.80	0.75	1861	24	1973	61	1918	38	-6.0	-2.8	1861	24
12/4/12	CS12-1	125	25µm	210	65074	5259	11765	114442	2579	0.54	12	32	60	0.0792	1.44	2.391	2.45	0.2189	1.98	0.77	1178	28	1276	46	1240	34	-8.3	-2.9	1178	28
12/4/12	CS12-1	126	25µm	98	215572	23175	44078	251266	5897	0.52	41	71	137	0.1068	1.52	4.587	2.51	0.3115	1.99	0.76	1746	28	1748	61	1747	41	-0.1	-0.1	1746	28
12/4/12	CS12-1	127	25µm	-416	338011	38208	58415	286735	8505	0.41	64	81	198	0.1126	1.64	5.241	2.48	0.3377	1.85	0.69	1842	30	1875	60	1859	41	-1.8	-0.9	1842	30
12/4/12	CS12-1	128	25µm	193	86701	9569	32579	188887	2194	1.05	16	54	51	0.1101	1.28	5.127	2.30	0.3378	1.91	0.79	1801	23	1876	62	1841	38	-4.1	-1.9	1801	23
12/4/12	CS12-1	129	25µm	-304	187715	21935	64282	332069	4421	0.92	35	94	103	0.1160	1.47	5.964	2.61	0.3731	2.16	0.80	1895	26	2044	75	1971	44	-7.9	-3.7	1895	26
12/4/12	CS12-1	130	25µm	-95	377375	35053	47135	322425	12209	0.32	71	91	284	0.0930	1.25	3.438	2.26	0.2681	1.88	0.79	1488	24	1531	51	1513	35	-2.9	-1.2	1488	24
12/4/12	CS12-1	131	25µm	104	60298	4831	23298	193892	2319	1.02	11	55	54	0.0832	1.50	2.468	2.31	0.2153	1.75	0.70	1273	29	1257	40	1263	33	1.3	0.5	1273	29
12/4/12	CS12-1	132	25µm	529	179119	26882	53056	149538	6113	0.30	34	42	142	0.1540	1.66	5.144	2.64	0.2424	2.05	0.74	2390	28	1399	51	1843	44	41.5	24.1	2390	28
12/4/12	CS12-1	133	25µm	284	821966	98059	211329	1024771	20905	0.60	155	291	486	0.1187	1.53	5.495	2.72	0.3358	2.24	0.80	1937	27	1866	72	1900	46	3.7	1.8	1937	27
12/4/12	CS12-1	134	25µm	227	286101	23147	112595	1005552	10963	1.12	54	285	255	0.0811	1.01	2.479	1.89	0.2217	1.60	0.79	1225	20	1291	37	1266	27	-5.4	-2.0	1225	20
12/4/12	CS12-1	135	25µm	-130	124637	10496	45138	394146	4827	1.00	24	112	112	0.0834	1.36	2.497	2.28	0.2174	1.83	0.76	1278	26	1268	42	1271	32	0.8	0.3	1278	26

12/4/12	CS12-1	136	25µm	-7	339353	38831	133424	746027	7850	1.16	64	212	183	0.1145	1.29	5.758	2.17	0.3648	1.75	0.75	1873	23	2005	60	1940	37	-7.1	-3.3	1873	23
12/4/12	CS12-1	137	25µm	226	211502	21005	87785	689048	7709	1.09	40	195	179	0.0968	1.66	3.111	2.33	0.2331	1.63	0.62	1564	31	1351	40	1435	35	13.7	5.9	1564	31
12/4/12	CS12-1	138	25µm	-28	196228	22472	93067	544891	4897	1.36	37	155	114	0.1125	1.43	5.199	2.19	0.3355	1.66	0.69	1840	26	1865	53	1852	37	-1.4	-0.7	1840	26
12/4/12	CS12-1	139	25µm	113	88781	7050	21176	198215	3443	0.70	17	56	80	0.0790	1.52	2.388	2.39	0.2193	1.84	0.72	1172	30	1278	42	1239	34	-9.1	-3.2	1172	30
12/4/12	CS12-1	140	25µm	-26	137237	15328	43978	256972	3425	0.92	26	73	80	0.1133	1.28	5.295	2.22	0.3391	1.82	0.77	1853	23	1883	59	1868	37	-1.6	-0.8	1853	23
12/4/12	CS12-1	141	25µm	25	781502	92071	39245	236803	20156	0.14	147	67	469	0.1170	1.12	5.417	1.95	0.3361	1.59	0.75	1910	20	1868	51	1888	33	2.2	1.0	1910	20
12/4/12	CS12-1	142	25µm	97	466764	53954	50838	281736	11454	0.30	88	80	266	0.1150	1.17	5.528	1.91	0.3489	1.51	0.70	1879	21	1929	50	1905	32	-2.7	-1.3	1879	21
12/4/12	CS12-1	143	25µm	462	433997	36053	49701	425553	16039	0.32	82	121	373	0.0830	1.16	2.669	2.05	0.2334	1.69	0.77	1269	23	1352	41	1320	30	-6.6	-2.4	1269	23
12/4/12	CS12-1	144	25µm	-135	246835	29104	69135	369293	5868	0.77	47	105	136	0.1176	1.19	5.718	2.07	0.3528	1.70	0.77	1920	21	1948	57	1934	35	-1.5	-0.7	1920	21
12/5/12	CS12-4	1	25µm	-41	316780	24387	47566	506288	12922	0.49	49	126	255	0.0775	0.84	2.035	1.73	0.1905	1.51	0.82	1135	17	1124	31	1127	23	1.0	0.3	1135	17
12/5/12	CS12-4	2	25µm	-108	156688	12049	33256	351992	6388	0.69	24	88	126	0.0775	1.00	2.006	1.86	0.1879	1.57	0.78	1133	20	1110	32	1117	25	2.1	0.7	1133	20
12/5/12	CS12-4	3	25µm	-390	331686	36922	54738	378330	8645	0.55	52	94	171	0.1107	0.83	4.635	1.96	0.3039	1.77	0.88	1810	15	1711	53	1756	32	5.5	2.6	1810	15
12/5/12	CS12-4	4	25µm	-204	120970	9162	17925	197427	4963	0.50	19	49	98	0.0755	0.83	1.977	1.98	0.1899	1.80	0.89	1083	17	1121	37	1108	26	-3.5	-1.2	1083	17
12/5/12	CS12-4	5	25µm	-109	57854	5035	14756	223849	2565	1.10	9	56	51	0.0854	1.06	2.071	1.88	0.1759	1.55	0.76	1325	20	1044	30	1139	25	21.2	8.3	1325	20
12/5/12	CS12-4	6	25µm	218	74119	6020	24566	258808	2900	1.12	12	64	57	0.0799	1.16	2.202	2.06	0.1999	1.70	0.77	1195	23	1175	36	1182	28	1.7	0.6	1195	23
12/5/12	CS12-4	7	25µm	755	626349	79814	179326	1284221	16237	1.00	97	319	321	0.1260	0.78	5.284	1.64	0.3044	1.45	0.82	2042	14	1713	43	1866	28	16.1	8.2	2042	14
12/5/12	CS12-4	8	25µm	69	443621	34384	61730	655176	18033	0.46	69	163	356	0.0770	0.77	2.029	1.54	0.1912	1.34	0.78	1121	15	1128	28	1125	21	-0.6	-0.2	1121	15
12/5/12	CS12-4	9	25µm	298	214058	17125	33892	351082	8728	0.51	33	87	172	0.0793	1.07	2.088	1.81	0.1910	1.46	0.72	1180	21	1127	30	1145	25	4.5	1.6	1180	21
12/5/12	CS12-4	10	25µm	-209	162377	12546	20541	225826	6599	0.43	25	56	130	0.0776	1.07	2.060	2.00	0.1926	1.69	0.80	1136	21	1136	35	1136	27	0.1	0.0	1136	21
12/5/12	CS12-4	11	25µm	762	496896	47157	116561	1476063	22891	0.81	77	367	452	0.0944	0.75	2.227	1.84	0.1712	1.68	0.89	1515	14	1019	32	1190	26	32.8	14.3	1515	14
12/5/12	CS12-4	12	25µm	13	101821	8245	22932	254510	3810	0.84	16	63	75	0.0805	1.30	2.263	2.19	0.2040	1.76	0.75	1209	26	1197	38	1201	30	1.0	0.4	1209	26
12/5/12	CS12-4	13	25µm	152	250870	22017	40460	342025	7820	0.55	39	85	154	0.0875	1.18	2.964	2.07	0.2458	1.70	0.77	1371	23	1417	43	1398	31	-3.4	-1.3	1371	23
12/5/12	CS12-4	14	25µm	164	151895	13514	26980	232296	5144	0.57	24	58	102	0.0883	1.05	2.843	2.11	0.2336	1.83	0.83	1389	20	1353	45	1367	31	2.6	1.0	1389	20
12/5/12	CS12-4	15	25µm	392	339494	27508	34733	342715	13243	0.33	53	85	262	0.0805	1.06	2.247	1.68	0.2026	1.30	0.63	1208	21	1189	28	1196	23	1.6	0.5	1208	21
12/5/12	CS12-4	16	25µm	-315	11959	916	1730	19849	456	0.55	2	5	9	0.0753	2.76	2.073	3.93	0.1998	2.80	0.69	1076	55	1174	60	1140	52	-9.1	-3.0	1076	55
12/5/12	CS12-4	17	25µm	193	189166	15242	35039	357476	6949	0.65	29	89	137	0.0808	0.89	2.325	1.72	0.2089	1.47	0.79	1216	17	1223	33	1220	24	-0.5	-0.2	1216	17
12/5/12	CS12-4	18	25µm	185	289863	32744	58562	377569	6716	0.71	45	94	133	0.1131	0.92	5.211	1.80	0.3342	1.55	0.80	1850	17	1859	50	1854	30	-0.5	-0.2	1850	17
12/5/12	CS12-4	19	25µm	-1	57584	4816	9954	111918	2268	0.62	9	28	45	0.0824	1.39	2.283	2.36	0.2009	1.91	0.76	1256	27	1180	41	1207	33	6.0	2.2	1256	27
12/5/12	CS12-4	20	25µm	223	167003	12898	30899	307216	6782	0.57	26	76	134	0.0770	1.19	2.031	2.06	0.1913	1.68	0.76	1121	24	1129	35	1126	28	-0.7	-0.2	1121	24
12/5/12	CS12-4	21	25µm	13	207972	23125	47080	290693	5081	0.72	32	72	100	0.1111	1.17	4.854	2.42	0.3171	2.12	0.85	1817	21	1776	66	1794	40	2.3	1.0	1817	21
12/5/12	CS12-4	22	25µm	263	199012	15814	37288	364587	8287	0.55	31	91	164	0.0792	1.46	2.040	2.70	0.1869	2.27	0.82	1176	29	1105	46	1129	36	6.1	2.1	1176	29
12/5/12	CS12-4	23	25µm	1126	566638	68456	160812	1035369	19476	0.67	88	258	385	0.1351	4.10	4.498	5.45	0.2416	3.59	0.64	2165	71	1395	90	1731	87	35.6	19.4	2165	71
12/5/12	CS12-4	24	25µm	234	415927	45957	57504	381838	10375	0.46	65	95	205	0.1102	1.13	4.849	2.18	0.3193	1.86	0.82	1803	21	1786	58	1793	36	0.9	0.4	1803	21
12/5/12	CS12-4	25	25µm	-319	337634	26439	46164	461802	13678	0.43	52	115	270	0.0778	1.10	2.048	1.89	0.1910	1.54	0.74	1142	22	1127	32	1132	26	1.3	0.4	1142	22
12/5/12	CS12-4	26	25µm	1055	507697	50113	141171	1293181	21348	0.76	79	322	422	0.0986	1.60	2.505	2.56	0.1844	2.00	0.74	1598	30	1091	40	1274	37	31.7	14.4	1598	30
12/5/12	CS12-4	27	25µm	95	57756	4621	8003	85216	2454	0.44	9	21	48	0.0781	1.45	2.025	2.79	0.1882	2.39	0.84	1149	29	1112	49	1124	37	3.2	1.1	1149	29
12/5/12	CS12-4	28	25µm	134	90628	7247	25662	280891	3793	0.93	14	70	75	0.0801	1.22	2.035	2.26	0.1843	1.90	0.80	1200	24	1090	38	1127	30	9.2	3.3	1200	24
12/5/12	CS12-4	29	25µm	-51	68867	5551	12061	111439	2654	0.53	11	28	52	0.0794	1.41	2.172	2.25	0.1984	1.75	0.72	1182	28	1167	37	1172	31	1.3	0.4	1182	28
12/5/12	CS12-4	30	25µm	98	103430	10022	16274	123972	3060	0.51	16	31	60	0.0970	1.27	3.491	2.47	0.2612	2.12	0.83	1566	24	1496	56	1525	38	4.5	1.9	1566	24
12/5/12	CS12-4	31	25µm	648	83864	15835	40109	154261	2954	0.66	13	38	58	0.1859	3.50	5.705	4.16	0.2227	2.24	0.50	2706	58	1296	52	1932	69	52.1	32.9	2706	58
12/5/12	CS12-4	32	25µm	340	66293	7810	18504	116906	2650	0.56	10	29	52	0.1116	4.33	3.054	4.63	0.1985	1.64	0.29	1826	78	1167	35	1421	68	36.1	17.9	1826	78
12/5/12	CS12-4	33	25µm	175	66254	5961	16810	141954	1998	0.89	10	35	39	0.0885	1.01	3.130	1.96	0.2566	1.68	0.81	1393	19	1473	44	1440	30	-5.7	-2.3	1393	19
12/5/12	CS12-4	34	25µm	-74	130537	10276	18475	205817	5438	0.48	20	51	107	0.0783	0.92	2.041	1.79	0.1890	1.53	0.80	1156	18	1116	31	1129	24	3.4	1.2	1156	18
12/5/12	CS12-4	35	25µm	1720	463557	74691	232542	2161099	21226	1.28	72	538	419	0.1609	1.38	3.788	2.06	0.1708	1.53	0.65	2465	23	1017	29	1590	33	58.8	36.1	2465	23
12/5/12	CS12-4	36	25µm	71	408063	44635	30798	202381	9830	0.26	63	50	194	0.1100	0.72	4.819	1.51	0.3178	1.32	0.79	1800	13	1779	41	1788	25	1.1	0.5	1800	13
12/5/12	CS12-4	37	25µm	-111	98874	8059	18056	189840	3855	0.62	15	47	76	0.0813	1.23	2.273	2.02	0.2028	1.61	0.72	1229	24	1190	35	1204	28	3.2	1.1	1229	24
12/5/12	CS12-4	38	25µm	73	60313	5636	13540	112728	1898	0.75	9	28	37	0.0909	1.10	3.113	2.31	0.2486	2.03	0.86	1444	21	1431	52	1436	35	0.9	0.3	1444	21
12/5/12	CS12-4	39	25µm	327	409240	42715	178314	1861857	19187	1.22	64	463	379	0.1055	1.25	2.432	2.03	0.1674	1.60	0.72	1722	23	998	30	1252	29	42.1	20.3	1722	23
12/5/12	CS12-4	40	25µm	402	537734	50540	126083	1267686	23311	0.68	84	315	461	0.0939	0.90	2.308	1.77	0.1783	1.53	0.80	1506	17	1058	30	1215	25	29.7	12.9	1506	17
12/5/12	CS12-4	41	25µm	-289	182280	14806	36053	354148	6894	0.65	28	88	136	0.0807	0.92	2.294	1.98	0.2063	1.76	0.85	1214	18	1209	39	1210	28	0.4	0.1	1214	18
12/5/12	CS12-4	42	25µm	-6	121308	9386	18739	187763	5001	0.47	19	47	99	0.0773	1.26	1.979	2.27	0.1856	1.89	0.79	1130	25	1098	38	1108	30	2.9	1.0	1130	25
12/5/12	CS12-4	43	25µm	-172	201238	16892	27267	291179	8539	0.43	31	72	169	0.0835	1.41	2.133	2.10	0.1853	1.55	0.65	1281	27	1096	31	1160	29	14.5	5.5	1281	27
12/5/12	CS12-4	44	25µm	339	219889	20384	32318	249649	6957	0.45	34	62	137	0.0913	0.98	3.141	1.91	0.2496	1.65	0.81	1453	19	1436	42	1443	29	1.1	0.4	1453	19
12/5/12	CS12-4	45	25µm	712	563540	59628	130885	889831	21577	0.52	88	221	426	0.1047	1.57	3.010	2.40	0.2086	1.81	0.70	1710	29	1221	40	1410	36	28.6	13.4	1710	29
12/5/12	CS12-4	46	25µm	192	206454	16973	61447	618846	8791	0.89	32	154	174	0.0815	1.11	2.060	2.33	0.1834	2.05	0.86	1234	22	1086	41	1136	31	12.0	4.4	1234	22
12/5/12	CS12-4	47	25µm	179	2572	251	58	236	113	0.03	0	0	2	0.0962	4.97	2.470	7.09	0.1863	5.06	0.71	1552	93	1101	102	1263	98	29.0	12.8	1552	93
12/5/12	CS12-4	48	25µm	1886	787822	165819	182199	2600722	61849	0.53	122	647	1222	0.2083	1.19	2.818	2.72	0.0982	2.45	0.89	2892	19	604	28	1360	40	79.1	55.6	604	28
12/5/12	CS12-4	49	25µm	977	511895	64771	86671	664248	18637	0.45	80	165	368	0.1224	1.42	3.699	2.55	0.2192	2.12	0.80	1992	25	1278	49	1571	40	35.9	18.7	1992	25
12/5/12	CS12-4	50	25µm	-124	38342	3111	7789	71850	1565	0.58	6	18	31	0.0816	1.84	2.113	2.74	0.1878	2.04	0.70	1236	36	1110	41	1153	37	10.2	3.8	1236	36
12/5/12	CS12-4	51	25µm	412	500868	47113	105505	907944	22429	0.51	78	226	443	0.0933	1.83	2.292	2.57	0.1782	1.81	0.64	1495	35	1057	35	1210	36	29.3	12.6	1495	35
12/5/12	CS12-4	52	25µm	-118	94583	7470	11764	133341	3949	0.43	15	33	78	0.0783	1.32	2.055	2.31	0.1906	1.90	0.78	1153	26	1124	39	1134	31	2.5	0.8	1153	26
12/5/12	CS12-4	53	25µm	30	347434	26663	54402	549368	14358	0.48	54	137	284	0.0770	1.24	1.995	2.22	0.1879	1.84	0.79	1122	25	1110	37	1114	30	1.0	0.3	1122	25
12/5/12	CS12-4	54	25µm	541	89315	10120	20430	129150	2131	0.76	14	32	42	0.1113	1.10	5.131	2.21	0.3345	1.91	0.84	1821	20	1860	61	1841	37	-2.1	-1.0	1821	20
12/5/12	CS12-4	55	25µm	142	225108	20697	39893	349221	7056	0.62	35	87	139	0.0909	1.11	3.185	1.97	0.2542	1.62	0.76	1445	21	1460	42	1454	30	-1.0	-0.4	1445	21
12/5/12	CS12-4	56	25µm	-95	457667	37888	82661	814507	16702	0.61	71	203	330	0.0824	0.90	2.442	1.63	0.2150	1.36	0.73	1255	18	1255	31	1255	23	0.0	0.0	1255	18
12/5/12	CS12-4	57	25µm	510	147658	14420	29443	233885	5211	0.57	23	58	103	0.0987	3.12	2.984	3.76	0.2194	2.09	0.51	1599	58	1279	48	1403	56	20.0	8.9	1599	58
12/5/12	CS12-4	58	25µm	830	284458	29934	69513	686709	11965	0.72	44	171	236	0.1025	1.13	2.692	1.82	0.1905	1.42	0.67	1671	21	1124	29	1326	27	32.7	15.2	1671	21
12/5/12	CS12-4	59	25µm	148	291467	56943	82256	391998	4963	0.99	45	98	98	0.1928	1.03	12.227	1.95	0.4601	1.66	0.80	2766	17	2440	67	2622	36	11.8	6.9	2766	17
12/5/12	CS12-4	60	25µm	3612	371199	79192	296712	3812456	40201	1.19	58	948	794	0.2143	1.24	2.113	2.36	0.0716	2.01	0.82	2938	20	446	17	1153	32	84.8	61.4	446	17

12/5/12	CS12-4	61	25µm	-36	67735	5576	13059	133412	2598	0.65	11	33	51	0.0812	1.42	2.295	2.19	0.2052	1.66	0.69	1225	28	1203	36	1211	30	1.8	0.6	1225	28
12/5/12	CS12-4	62	25µm	-406	482787	44277	72002	607059	14595	0.52	75	151	288	0.0902	0.83	3.220	1.70	0.2590	1.49	0.81	1430	16	1485	39	1462	26	-3.8	-1.5	1430	16
12/5/12	CS12-4	63	25µm	41	147758	11359	27919	310262	5956	0.66	23	77	118	0.0752	1.06	2.018	1.89	0.1947	1.56	0.76	1074	21	1147	33	1122	25	-6.8	-2.2	1074	21
12/5/12	CS12-4	64	25µm	29	410078	31872	48610	530582	16233	0.41	64	132	321	0.0782	1.09	2.106	2.00	0.1954	1.67	0.78	1152	22	1151	35	1151	27	0.1	0.0	1152	22
12/5/12	CS12-4	65	25µm	431	184936	14357	41234	449596	7738	0.73	29	112	153	0.0772	1.02	2.003	1.90	0.1883	1.60	0.78	1125	20	1112	33	1116	25	1.2	0.4	1125	20
12/5/12	CS12-4	66	25µm	295	298684	26073	50697	445790	10353	0.54	46	111	205	0.0869	1.01	2.719	1.89	0.2270	1.60	0.79	1358	19	1319	38	1334	28	2.9	1.1	1358	19
12/5/12	CS12-4	67	25µm	-119	160753	13254	35515	354359	6226	0.72	25	88	123	0.0811	1.19	2.271	2.08	0.2033	1.70	0.76	1223	23	1193	37	1203	29	2.4	0.9	1223	23
12/5/12	CS12-4	68	25µm	27	33161	2542	6209	68537	1375	0.63	5	17	27	0.0787	1.19	2.005	2.39	0.1849	2.08	0.84	1164	24	1094	42	1117	32	6.0	2.1	1164	24
12/5/12	CS12-4	69	25µm	174	345536	36405	24255	150980	8957	0.21	54	38	177	0.1055	0.91	4.328	1.80	0.2976	1.55	0.81	1723	17	1680	46	1699	29	2.5	1.1	1723	17
12/5/12	CS12-4	70	25µm	203	465130	44260	64697	475915	14361	0.42	72	118	284	0.0939	0.99	3.252	2.08	0.2513	1.83	0.85	1506	19	1445	47	1470	32	4.0	1.7	1506	19
12/5/12	CS12-4	71	25µm	90	190962	14159	52572	456114	7861	0.73	30	113	155	0.0741	1.10	1.933	1.92	0.1892	1.57	0.75	1045	22	1117	32	1093	25	-6.9	-2.2	1045	22
12/5/12	CS12-4	72	25µm	-95	71560	5695	8456	74365	3105	0.30	11	19	61	0.0791	1.38	2.022	2.55	0.1855	2.15	0.81	1174	27	1097	43	1123	34	6.6	2.3	1174	27
12/5/12	CS12-4	73	25µm	136	97968	9213	24956	170375	3210	0.67	15	42	63	0.0911	1.05	3.088	2.03	0.2460	1.74	0.81	1448	20	1418	44	1430	31	2.1	0.8	1448	20
12/5/12	CS12-4	74	25µm	462	581091	68653	181462	1206218	19633	0.77	90	300	388	0.1172	1.01	3.859	2.14	0.2390	1.89	0.86	1913	18	1381	47	1605	34	27.8	13.9	1913	18
12/5/12	CS12-4	75	25µm	-10	239657	19191	36110	316058	10350	0.38	37	79	204	0.0800	1.20	2.036	2.44	0.1846	2.12	0.85	1198	24	1092	43	1128	33	8.8	3.2	1198	24
12/5/12	CS12-4	76	25µm	-128	26278	2113	5144	55867	1160	0.61	4	14	23	0.0814	2.09	1.999	2.85	0.1782	1.93	0.62	1231	41	1057	38	1115	38	14.1	5.2	1231	41
12/5/12	CS12-4	77	25µm	-11	145873	11542	20375	190004	6311	0.38	23	47	125	0.0780	1.53	1.987	2.50	0.1848	1.98	0.75	1147	30	1093	40	1111	33	4.7	1.6	1147	30
12/5/12	CS12-4	78	25µm	-10	74878	6145	18275	166634	2890	0.73	12	41	57	0.0804	1.29	2.289	2.51	0.2066	2.15	0.83	1207	25	1210	47	1209	35	-0.3	-0.1	1207	25
12/5/12	CS12-4	79	25µm	8	33235	2693	6963	67219	1447	0.58	5	17	29	0.0786	1.77	1.979	2.68	0.1827	2.01	0.70	1163	35	1082	40	1108	36	7.0	2.4	1163	35
12/5/12	CS12-4	80	25µm	127	198535	18259	90527	694182	6496	1.35	31	173	128	0.0923	1.18	3.017	2.12	0.2372	1.77	0.79	1474	22	1372	44	1412	32	6.9	2.8	1474	22
12/5/12	CS12-4	81	25µm	94	130842	12861	54594	474456	4587	1.30	20	118	91	0.0971	1.24	3.017	2.19	0.2254	1.80	0.78	1570	23	1310	43	1412	33	16.5	7.2	1570	23
12/5/12	CS12-4	82	25µm	48	182325	17766	66800	495913	6229	1.00	28	123	123	0.0961	1.20	3.064	2.42	0.2313	2.10	0.84	1550	23	1341	51	1424	36	13.5	5.8	1550	23
12/5/12	CS12-4	83	25µm	-299	197869	15448	26380	277315	8174	0.43	31	69	161	0.0767	1.02	1.997	1.94	0.1890	1.65	0.80	1112	20	1116	34	1115	26	-0.3	-0.1	1112	20
12/5/12	CS12-4	84	25µm	209	78941	6470	11368	120297	3150	0.48	12	30	62	0.0808	1.25	2.182	2.02	0.1960	1.58	0.71	1216	25	1154	33	1175	28	5.1	1.8	1216	25
12/5/12	CS12-4	85	25µm	80	230652	17510	24677	268585	9493	0.36	36	67	188	0.0761	0.75	2.032	1.64	0.1936	1.46	0.83	1099	15	1141	30	1126	22	-3.8	-1.3	1099	15
12/5/12	CS12-4	86	25µm	528	641090	81433	140679	1011388	16813	0.76	100	252	332	0.1263	0.99	5.249	1.90	0.3015	1.61	0.80	2047	18	1699	48	1861	32	17.0	8.7	2047	18
12/5/12	CS12-4	87	25µm	311	27967	2186	5233	63085	1173	0.68	4	16	23	0.0789	2.04	2.051	2.92	0.1886	2.09	0.67	1169	40	1114	43	1133	39	4.7	1.6	1169	40
12/5/12	CS12-4	88	25µm	-303	112831	9332	19144	221862	4433	0.63	18	55	88	0.0827	1.47	2.301	2.47	0.2019	1.98	0.76	1262	29	1186	43	1213	34	6.1	2.2	1262	29
12/5/12	CS12-4	89	25µm	285	214004	20010	27929	235457	6666	0.44	33	59	132	0.0914	1.23	3.170	2.32	0.2515	1.96	0.82	1456	23	1446	51	1450	35	0.7	0.2	1456	23
12/5/12	CS12-4	90	25µm	36	91216	9698	28742	266887	2561	1.31	14	66	51	0.1052	1.62	4.038	2.79	0.2785	2.28	0.79	1718	30	1584	64	1642	44	7.8	3.5	1718	30
12/5/12	CS12-4	91	25µm	73	322835	58248	69413	506979	10807	0.59	50	126	214	0.1785	1.08	5.808	2.86	0.2361	2.65	0.92	2639	18	1366	65	1948	48	48.2	29.8	2639	18
12/5/12	CS12-4	92	25µm	236	81708	6445	16802	168271	3467	0.61	13	42	68	0.0769	1.14	1.960	2.18	0.1851	1.86	0.82	1117	23	1095	37	1102	29	2.0	0.7	1117	23
12/5/12	CS12-4	93	25µm	174	203189	16041	31793	283453	8681	0.41	32	71	172	0.0776	1.06	1.993	1.98	0.1863	1.67	0.79	1137	21	1101	34	1113	26	3.1	1.0	1137	21
12/5/12	CS12-4	94	25µm	75	101924	9328	34840	259893	3298	0.99	16	65	65	0.0911	1.52	3.121	2.41	0.2485	1.87	0.73	1449	29	1431	48	1438	36	1.3	0.5	1449	29
12/5/12	CS12-4	95	25µm	-177	216825	16580	32888	323664	9258	0.44	34	81	183	0.0768	1.28	1.938	2.32	0.1830	1.94	0.80	1117	26	1083	39	1094	31	3.0	1.0	1117	26
12/5/12	CS12-4	96	25µm	32	75347	6192	11243	136644	3401	0.51	12	34	67	0.0812	1.37	1.974	2.35	0.1765	1.90	0.77	1225	27	1048	37	1107	31	14.5	5.3	1225	27
12/5/12	CS12-4	97	25µm	362	307036	24771	50701	910700	13260	0.86	48	227	262	0.0794	1.21	2.017	2.18	0.1843	1.81	0.79	1183	24	1090	36	1121	29	7.8	2.8	1183	24
12/5/12	CS12-4	98	25µm	292	59558	5440	6617	53730	1873	0.36	9	13	37	0.0922	1.44	3.098	2.44	0.2437	1.97	0.77	1473	27	1406	49	1432	37	4.5	1.8	1473	27
12/5/12	CS12-4	99	25µm	-2	41335	3260	6384	69745	1727	0.51	6	17	34	0.0791	1.52	2.044	2.63	0.1874	2.14	0.79	1175	30	1108	43	1130	35	5.7	2.0	1175	30
12/5/12	CS12-4	100	25µm	-228	86401	8100	14752	122960	2724	0.57	13	31	54	0.0921	1.30	3.191	2.43	0.2513	2.05	0.81	1470	25	1445	53	1455	37	1.7	0.7	1470	25
12/5/12	CS12-4	101	25µm	215	319548	36119	148557	996655	7776	1.61	50	248	154	0.1102	1.15	5.004	1.99	0.3295	1.62	0.75	1802	21	1836	52	1820	33	-1.9	-0.9	1802	21
12/5/12	CS12-4	102	25µm	130	392742	36755	65369	543998	12178	0.56	61	135	241	0.0938	1.29	3.256	2.07	0.2520	1.62	0.71	1503	24	1449	42	1471	32	3.6	1.5	1503	24
12/5/12	CS12-4	103	25µm	-174	155499	12141	23543	255214	6460	0.50	24	63	128	0.0781	1.08	2.016	2.30	0.1872	2.03	0.86	1151	21	1106	41	1121	31	3.9	1.3	1151	21
12/5/12	CS12-4	104	25µm	188	135906	10399	16696	185994	5385	0.43	21	46	106	0.0759	1.10	2.084	1.98	0.1991	1.65	0.78	1094	22	1170	35	1143	27	-7.0	-2.4	1094	22
12/5/12	CS12-4	105	25µm	315	133870	14595	69457	462363	3387	1.72	21	115	67	0.1095	1.29	4.737	2.49	0.3140	2.13	0.83	1791	23	1760	65	1774	41	1.7	0.8	1791	23
12/5/12	CS12-4	106	25µm	30	5969	635	241	13346	271	0.62	1	3	5	0.1040	4.40	2.534	5.60	0.1768	3.47	0.60	1697	81	1050	67	1282	78	38.1	18.1	1697	81
12/5/12	CS12-4	107	25µm	-152	49005	3902	10686	123610	2086	0.75	8	31	41	0.0798	1.37	2.041	2.36	0.1855	1.92	0.77	1192	27	1097	39	1129	32	8.0	2.8	1192	27
12/5/12	CS12-4	108	25µm	3262	451853	82970	236397	3489048	49306	0.89	70	868	974	0.1840	1.21	1.872	2.37	0.0738	2.03	0.83	2689	20	459	18	1071	31	82.9	57.1	459	18
12/5/12	CS12-4	109	25µm	-20	230213	18434	44356	521631	9673	0.68	36	130	191	0.0786	1.19	2.058	2.16	0.1899	1.80	0.79	1163	24	1121	37	1135	29	3.6	1.2	1163	24
12/5/12	CS12-4	110	25µm	328	140822	11456	23193	256751	6178	0.52	22	64	122	0.0805	1.51	2.000	2.29	0.1804	1.73	0.69	1208	30	1069	34	1116	31	11.5	4.2	1208	30
12/5/12	CS12-4	111	25µm	-119	401875	30352	80706	821905	16386	0.63	62	204	324	0.0749	1.33	2.029	2.17	0.1965	1.71	0.73	1066	27	1156	36	1125	29	-8.4	-2.8	1066	27
12/5/12	CS12-4	112	25µm	-33	78302	6010	15135	144460	3316	0.55	12	36	66	0.0766	1.36	1.944	2.37	0.1843	1.94	0.78	1110	27	1090	39	1096	31	1.7	0.6	1110	27
12/5/12	CS12-4	113	25µm	-149	22658	1762	3139	30254	1014	0.38	4	8	20	0.0762	1.83	1.924	2.81	0.1831	2.13	0.72	1101	37	1084	42	1089	37	1.5	0.5	1101	37
12/5/12	CS12-4	114	25µm	90	100180	8052	20243	202359	4177	0.61	16	50	83	0.0803	1.61	2.063	2.41	0.1864	1.79	0.68	1205	32	1102	36	1137	32	8.6	3.1	1205	32
12/5/12	CS12-4	115	25µm	297	50608	3799	6827	81732	2150	0.48	8	20	42	0.0754	1.35	1.946	2.35	0.1873	1.92	0.78	1079	27	1106	39	1097	31	-2.5	-0.9	1079	27
12/5/12	CS12-4	116	25µm	-13	387114	30712	61403	672375	15869	0.53	60	167	314	0.0785	1.20	2.119	2.09	0.1959	1.71	0.76	1160	24	1153	36	1155	28	0.5	0.2	1160	24
12/5/12	CS12-4	117	25µm	330	89220	7195	13280	146872	3796	0.49	14	37	75	0.0813	1.60	2.072	2.61	0.1849	2.06	0.75	1229	31	1094	41	1139	35	11.0	4.0	1229	31
12/5/12	CS12-4	118	25µm	995	566809	72249	147498	1061455	15634	0.85	88	264	309	0.1270	0.95	5.021	1.77	0.2868	1.49	0.77	2057	17	1626	43	1823	30	21.0	10.8	2057	17
12/5/12	CS12-4	119	25µm	34	205982	17112	35865	383051	8350	0.58	32	95	165	0.0838	1.26	2.227	2.35	0.1929	1.98	0.81	1288	25	1137	41	1190	32	11.7	4.4	1288	25
12/5/12	CS12-4	120	25µm	-165	299570	25099	99167	1112132	11262	1.24	47	277	223	0.0832	0.85	2.436	1.68	0.2126	1.45	0.80	1273	17	1243	33	1253	24	2.4	0.9	1273	17
12/5/12	CS12-4	121	25µm	300	97111	10753	53548	345471	2260	1.92	15	86	45	0.1121	1.31	5.101	2.10	0.3303	1.65	0.72	1833	24	1840	53	1836	35	-0.4	-0.2	1833	24

cps = counts per second

concentrations in ppm are normalised to 91500 assuming 14.8ppm Pb, 30ppm Th and 80.2 ppm U,

Disc. % (6-38/7-6) = (1-(206/238age / 207/206a

Disc. % (6-38/7-6) = (1-(206/238age / 207/235age))*100

Data supplement 4: Expanded analytical methodology for chapter 4.

Methods

Zircon U-Pb Geochronology

Eight ~3 kg sedimentary quartzite samples were collected from the Ofte, Røynstaul, Morgedal, Gjuve, and Eidsborg formations within the Sveconorwegian supergroup (samples CS12-17, -18, -19, -20, -22, -23, -24, -25). See Table S1 for sample locations and descriptions. Zircons were extracted using standard techniques (i.e. Wilfley table, heavy liquid, Franz magnetic separation), mounted in epoxy resin and polished to expose a cross section through the center of the grains.

Zircons were examined for zoning patterns using cathodoluminescence (CL) and back-scattered electron (BSE) images (Fig. 4). Zircon U-Pb geochronology was performed by laser ablation single-collector inductively coupled plasma mass spectrometry (LA-SC-ICP-MS) at the NERC Isotope Geosciences Laboratory, Keyworth, UK (NIGL). All unknown and standard data is reported in the online supplemental materials DR1.

The instrumentation used for analyses comprises a Nu Instruments Attom single-collector HR-ICP-MS coupled to a New Wave Research UP193 solid-state laser ablation system. Laser ablation was accomplished with a 25 µm diameter spot size with a laser fluence of 2.0-2.2 J/cm2 at 10 Hz for 15 seconds of integration. On-peak dwell times were adjusted to give broadly the best precision on the Pb/Pb and U/Pb ratios for an average zircon composition: 200 µs on ^{202}Hg, ^{204}Pb, ^{204}Hg, ^{206}Pb, ^{208}Pb and ^{232}Th, 3 ms on ^{207}Pb, and 4ms on ^{235}U. ^{238}U was calculated using ^{235}U * 137.818 (Hiess et al., 2012). The Pb/Pb and U/Pb ratios were normalized to bracketing primary standards of 91500 and GJ-1, based on the average measured value of the standard compared to the ratio determined by ID-TIMS (Wiedenbeck et al., 1995, Jackson et al., 2004; see also DR2). All Pb/Pb and U/Pb standard analyses have an external reproducibility of < 2 % (2 standard deviations). Analyses significantly above ^{204}Pb (common lead) and below ^{207}Pb detection limits (~600 cps and ~2000 cps, respectively) were rejected.

Systematic uncertainties were propagated using quadratic addition incorporating the internal and external reproducibility of the reference material during each analytical session; these are the isotopic uncertainties of the reference material as determined by ID-TIMS, long term variance of the NIGL Nu Attom SC-ICP-MS, and decay constant uncertainties (e.g. Schoene et al., 2006). Accepted ages were selected from a 95% concordant subset using the $^{206}Pb/^{238}U$ and $^{207}Pb/^{206}Pb$ ages. Visualization of U-Pb concordia and zircon ages is done using Isoplot 4.0 (Ludwig, 2003) and densityplotter (Vermeesch, 2012). GPS locations of samples are presented in Table 1.

Zircon Hf Isotopic Analysis

Near concordant (> 95 % concordance) U–Pb zircon ablation sites from samples CS12-17, -18, -23, -24, and -25 were re-analyzed to measure their respective Lu–Hf isotopic compositions. Isotope analyses were carried out at the NIGL using a Thermo Scientific Neptune Plus MC-ICP-MS coupled to a New Wave Research UP193FX excimer laser ablation system and low-volume ablation cell (Horstwood et al., 2003). Helium was used as the carrier gas through the ablation cell with Ar makeup gas being connected via a T-piece and sourced from a Cetac Aridus II desolvating nebulizer. After initial set-up and tuning a 2% HNO3 solution was aspirated during the ablation analyses. ^{175}Lu, ^{172}Yb, ^{173}Yb, ^{176}Hf, ^{178}Hf, ^{179}Hf, and ^{180}Hf were measured simultaneously during static 30s ablation analyses (35 μm diameter; fluence = 8-10 J/cm^2).

A standard–sample–standard bracketing technique, using Mudtank and 91500 reference zircons were used to monitor accuracy and precision of internally corrected Hf isotope ratios and instrumental drift with respect to the Lu/Hf ratio, respectively. Hf reference solution JMC475 (analyzed doped with 50 ppb Yb and undoped) was analyzed during the analytical session to allow normalization of the laser ablation Hf isotope data. Correction for ^{176}Yb on the ^{176}Hf peak was made using reverse-mass-bias correction of the ^{176}Yb/^{173}Yb ratio (0.7941) empirically derived using Hf mass bias corrected Yb-doped JMC475 solutions (cf. Nowell and Parrish, 2001). ^{176}Lu interference on the ^{176}Hf peak was corrected by using the measured ^{175}Lu and assuming ^{176}Lu/^{175}Lu=0.02653.

A subset of U-Pb analyses with > 95% concordance was selected from each sample for Lu-Hf isotopic analysis. In each analysis, the 35 μm diameter Hf analysis ablation site is centered over the 25 μm diameter U-Pb ablation site. Reference material analyses and sample results are provided in Table S__.

Zircons incorporate a minor amount of ^{176}Lu during crystallization, which decays to ^{176}Hf (half-life of 3.78 Ga). To account for this we use the ^{176}Lu/^{177}Hf ratios to correct the measured ^{176}Hf/^{177}Hf ratio for the interpreted ^{207}Pb/^{206}Pb crystallization age. Subsequently, the ^{176}Hf/^{177}Hf$_{initial}$ ratio is calculated using the measured ^{176}Lu/^{177}Hf ratio and the decay constant of Sodelund et al. (2004). Normalizing ^{176}Hf/^{177}Hf$_{initial}$ ratios to the ^{176}Hf/^{177}Hf value of the present-day bulk silicate earth (0.28295; Patchett and Tatsumoto, 1980) allows the calculation of εHf [(^{176}Hf/^{177}Hf$_{initial/}$ ^{176}Hf/^{177}Hf$_{BSE}$)$*10^4$]. Approximately 20 % of the analyses were rejected due to extremely variable signal and high ^{178}Hf/^{177}Hf and ^{176}Hf/^{177}Hf uncertainties (> 20 %). The uncertainty propagation of the epsilon notation also includes the uncertainty of the ^{207}Pb/^{206}Pb crystallization age, as it is time integrated. Although this is an over propagation of uncertainty, we prefer this conservative approach for the epsilon notation when defining specific fields of similar εHf compositions. Uncertainties that incorporate the crystallization age uncertainty are on average 50 % (1σ = 20 %) larger than uncertainties that do not consider the crystallization age uncertainty.

Zircon O Isotopic Analysis

Prior to U-Pb and Hf analyses zircon oxygen isotopes were measured using the Cameca ims-1270 ion microprobe at the Edinburgh Ion Microprobe Facility (EIMF), University of Edinburgh on samples CS12-17, -23, -24, and -25. The $^{133}Cs^+$ primary ion beam was accelerated at 10 kV, with an intensity of ~2.5-3.0 nA current was used, with charge compensation of the Au-coated samples accomplished using a normal incidence electron flood gun. A pre-sputtering time of 30-60 s to remove the Au-coat was performed with a fixed beam that produced roughly elliptical 15 by 20 μm pits. Ions were extracted with a 10 kV voltage, and low energy secondary ions of ^{16}O and ^{18}O were selected using an energy window of 60 eV. During each analysis, the secondary beam was automatically scanned across a small field aperture for centering along the ion-optic axis, followed by scanning the entrance slit across the contrast aperture.

The daily mass resolving power was 2400, sufficient to resolve hydride interferences (e.g. ^{17}OH, ^{16}OD, $^{16}OH_2$). Secondary ions were simultaneously collected on Faraday collectors (FC) with average count rates from 2E9 ± 1E8 cps ± 1σ for ^{16}O and 4E6 ± 2E5 ± 1σ cps on ^{18}O. The background of the FC was measured at the beginning of each session. Each spot measurement was divided into 2 blocks consisting of 5 cycles/block (totaling 10 cycles) with a count time of 4 s/cycle resulting in a total count time of 40 s. Moving the sample, selecting the next grain and area to analyze, adjusting the sample height (Z-focus when necessary), pre-sputtering, and ion counting resulted in a total analysis time of approximately 5 min.

Reference materials were analyzed in the same mount as the samples bracketing sample analyses, with an average of 10 sample analyses between each standardization. Over the two days of analyses a total of 116 analyses of an internal standard (Laura) were made to calibrate 234 sample analyses. Uncertainties on individual analyses are reported at 1σ level. With low noise on the two faraday cup amplifiers, the internal precision of a single analysis is generally better than 1.4 ± 0.4 % (1σ) for $^{18}O/^{16}O$ ratio. Values of $\partial^{18}O$ are standardized to VSMOW and reported in standard per mil notation.

The instrumental mass fractionation factor (IMF) is corrected using Laura zircon standard with $(\partial^{18}O)_{VSMOW}$ = 5.3 ‰ (from the EIMF facility). Measured $^{18}O/^{16}O$ is normalized by using Vienna Standard Mean Ocean Water compositions (VSMOW), then corrected for the instrumental mass fractionation factor (IMF) as follows:

$$(\partial^{18}\mathrm{O})_{\mathrm{M}} = \left(\frac{(^{18}\mathrm{O}/^{16}\mathrm{O})_{\mathrm{M}}}{0.0020052} - 1\right) * 1000\ (‰)$$

$$\mathrm{IMF} = (\partial^{18}\mathrm{O})_{\mathrm{M(standard)}} - (\partial^{18}\mathrm{O})_{\mathrm{VSMOW}}$$

$$\partial^{18}\mathrm{O}_{\mathrm{Sample}} = (\partial^{18}\mathrm{O})_{\mathrm{M}} + \mathrm{IMF}$$

Analytical pits were examined using a scanning electron microscope at the University of Edinburgh to assure normal pit shape. Analyses with irregular analytical spots were discarded (see also Cavosie et al., 2005)

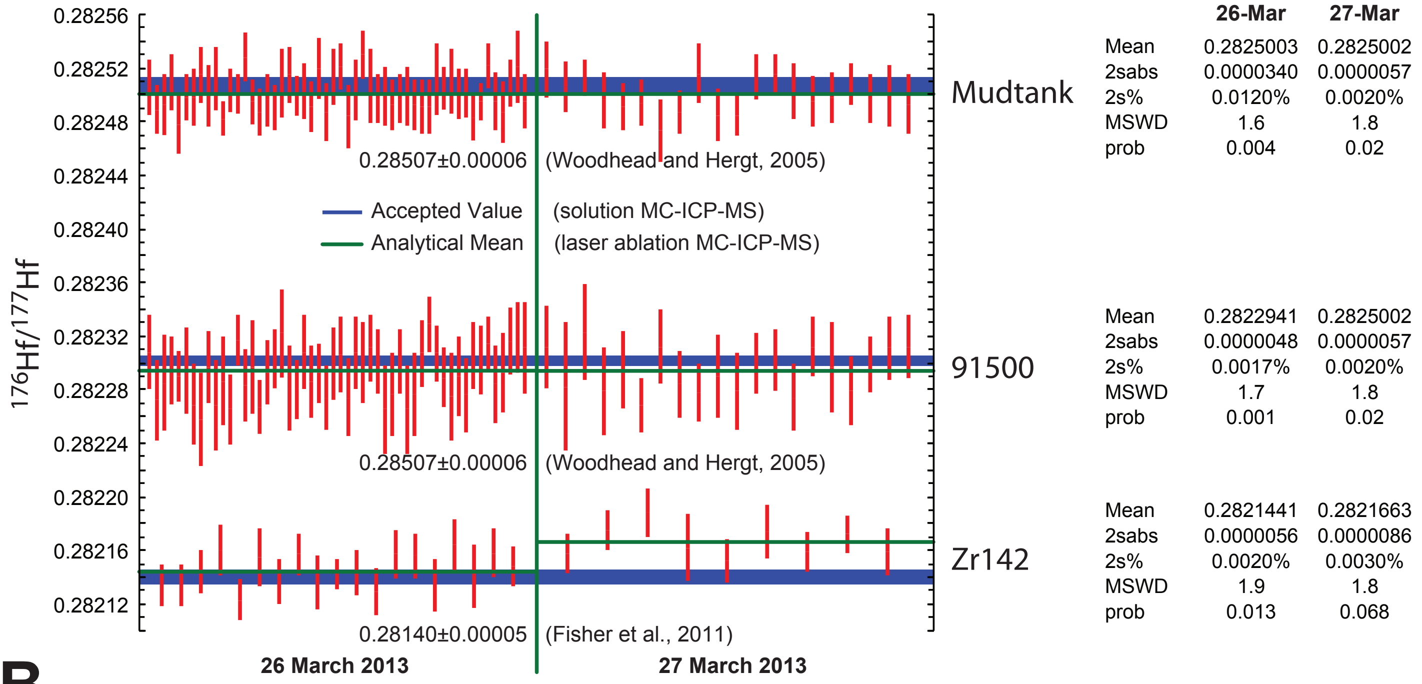
Zircons in equilibrium with pristine mantle-derived melts have ∂18O values of 5.3 ± 0.3 ‰ (Valley, 2003). Higher ∂18O values reflect a component of enriched in 18O, supracrustal material in the magma from which the zircon crystallized (Eiler, 2001). Importantly oxygen isotope ratios of igneous rocks are not sensitive to the age of material assimilated (as with Hf isotopes) but are entirely determined upon the amount of material that has experienced low-temperature oxygen fractionation (Valley, 2003). Melts that incorporate these sediments offset zircon $\partial^{18}O$ values accordingly (Valley et al., 1994; Roberts et al., 2013).

Lithogeochemistry

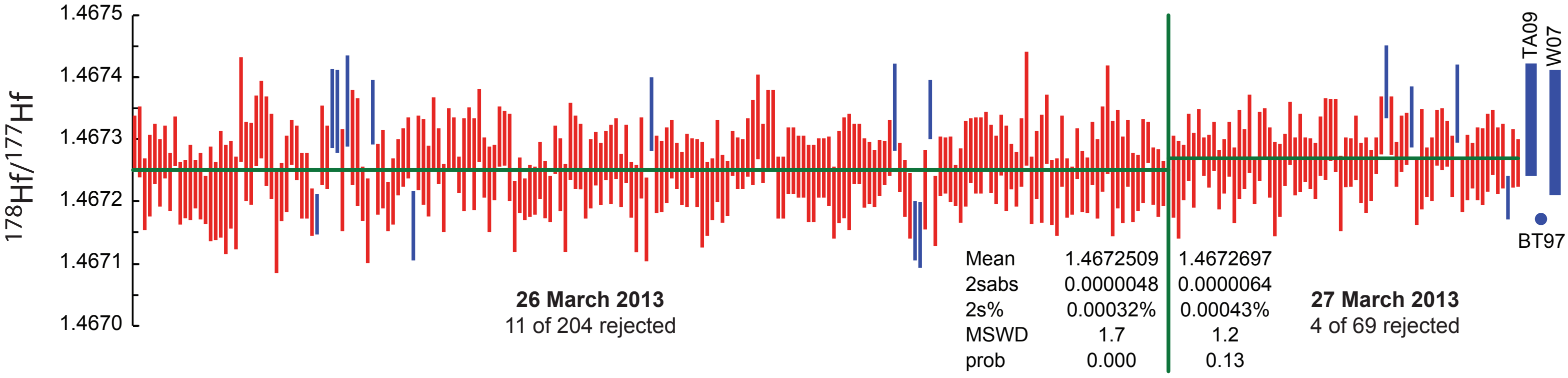
Whole-rock major and selected trace element analyses were conducted on 20 samples from the metabasalts within the Morgedal and Gjuve formations for major and trace elements using X-ray florescence (XRF) and inductively coupled plasma mass spectrometry (ICP-MS) at the University of St Andrews using a Spectro X-Lab XRF and a Thermo X Series II Quadrupole ICP-MS. Samples were crushed using a tungsten carbide shatterbox in order to avoid Cr contamination. Samples for XRF analysis were prepared using ~10 g of powder pressed into a 32 mm pressed powder pellet. Samples for ICP-MS analysis were prepared using 0.2500 g ± 0.0005 g samples mixed with 1.2500 g $LiBO_2$ flux, placed in a platinum crucible and fused in a meffule furnace for 20 minures at 1,000 ºC. The resulting glass bead was dissolved in 100 ml of 3.5 % laboratory grade HNO_3 and diluted 1,000 fold. Then 0.5 ml was separated and diluted 20 fold with 3.5% HNO_3 to give a final dilution of 20,000 fold. Data quality was monitored by analyses of USGS rock reference materials (GSR1 to GSR5). Analytical blanks were analyzed at the beginning of each session and a calibration block was used every ten samples. Correlation coefficient of standards for each of the elements analyzed was greater than 0.998 with the exception of Tm (0.997) and Pb (0.992). Each sample was ran three times with the mean value reported. One standard error for each element was < 5 %.

Data supplement 5: Hf and O analyses of reference materials and stable isotope ratios for chapter 4.

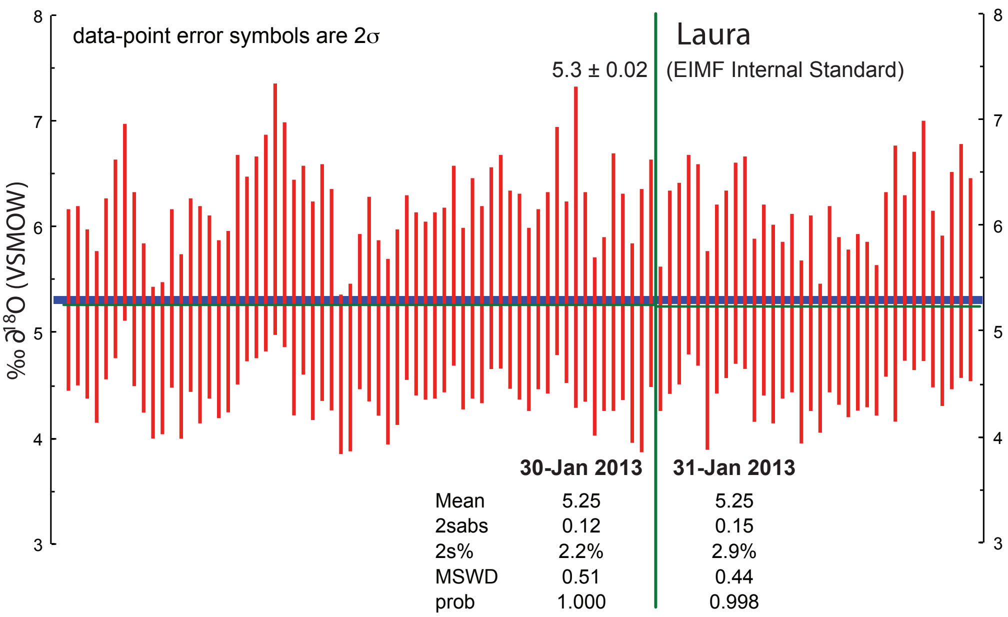
A.



B.



C.



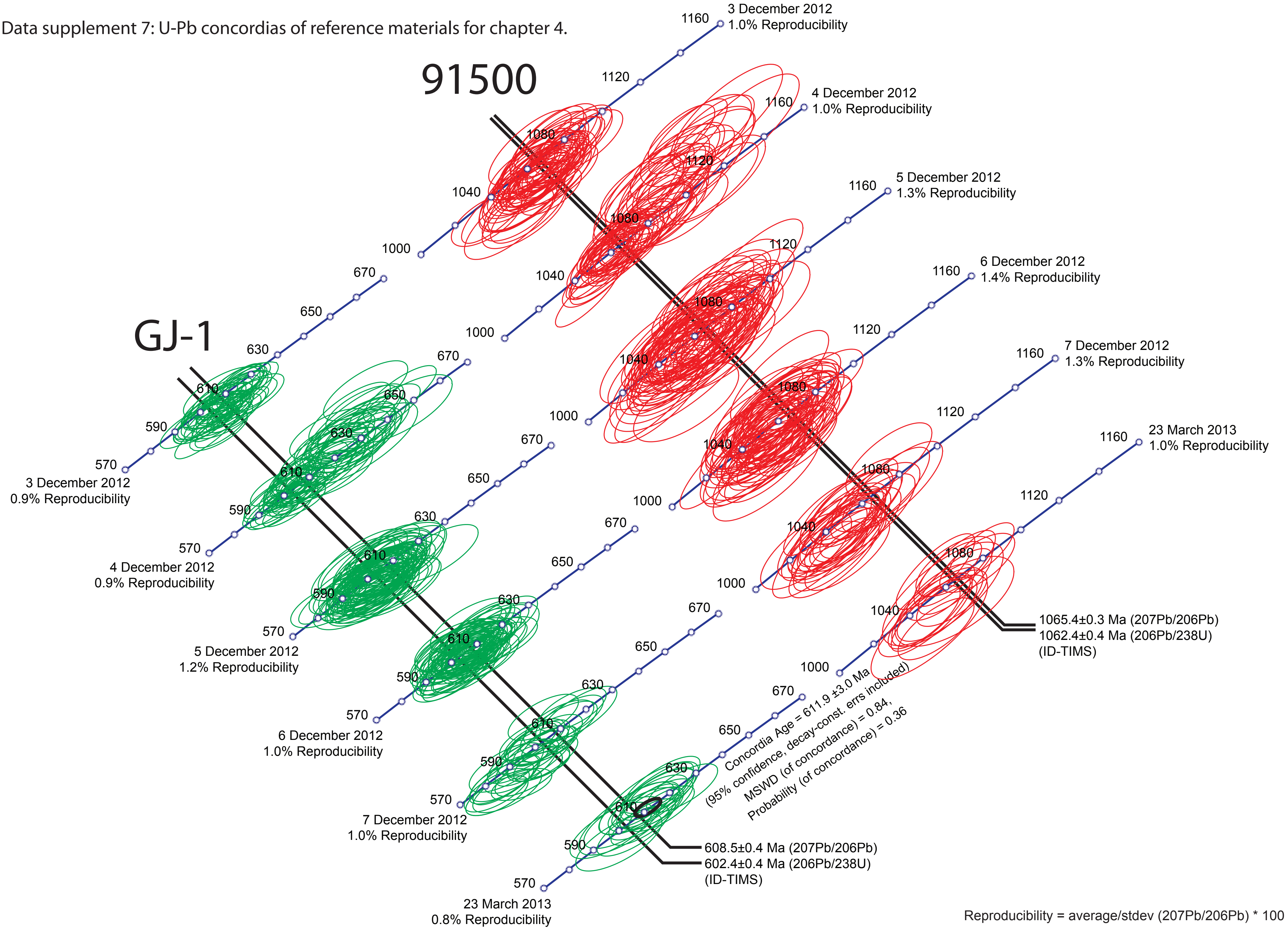
Data supplement 6: Whole rock geochemistry for chapter 4.

Sample*	Formation	SiO2 %	Al2O3 %	TiO2 %	Fe2O3 %	MgO %	CaO %	Na2O %	K2O %	MnO %	P2O5 %	LOI %	Total
AA12-03	Gjuve	48.9	13.2	1.5	11.4	6.8	7.5	3.7	0.7	0.2	0.1	6.0	99.9
AA12-04	Gjuve	45.6	17.2	1.4	11.0	8.2	9.1	3.1	0.4	0.2	0.1	3.8	99.9
AA12-12	Gjuve	46.5	16.4	1.8	13.9	6.3	8.3	3.6	0.3	0.2	0.2	2.2	99.9
AA12-14	Gjuve	46.7	16.3	1.4	12.3	7.4	9.4	3.0	0.2	0.2	0.1	2.8	99.9
AA12-16	Gjuve	57.4	11.5	2.2	13.4	3.9	6.3	3.2	0.3	0.2	0.3	1.1	99.8
AA12-19	Gjuve	46.4	15.3	2.2	14.5	7.5	8.4	4.0	0.1	0.2	0.3	1.0	99.9
AA12-20	Gjuve	42.3	15.0	3.9	18.4	6.3	8.5	2.9	0.8	0.2	0.7	0.9	99.9
AA12-05	Morgedal	43.0	14.4	3.4	16.7	6.6	7.3	2.9	1.4	0.2	0.6	3.5	99.9
AA12-07	Morgedal	44.3	14.8	3.5	16.2	6.2	5.2	4.9	0.6	0.2	0.6	3.3	99.8
AA12-08	Morgedal	45.1	15.2	2.4	15.6	6.2	7.4	3.7	0.2	0.2	0.3	3.7	99.9
AA12-09	Morgedal	47.5	14.1	1.8	15.2	6.8	6.7	2.8	0.9	0.2	0.2	3.6	99.9
AA12-13	Morgedal	47.5	16.2	1.8	12.2	9.3	4.9	3.3	0.4	0.2	0.3	3.9	99.9
AA12-15	Morgedal	45.9	16.2	2.6	15.2	6.8	7.7	2.9	0.8	0.2	0.5	2.5	101.1
AA12-21	Morgedal	61.4	13.0	1.5	9.0	3.0	4.9	2.5	2.3	0.2	0.2	2.0	99.9

Sample*	Formation	Ba	Co	Cu	Ni	Rb	Sr	V	Zn	Nb	Zr	Y	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
AA12-03	Gjuve	230	65	9	57	24	116	198	109	8	177	39	21.1	49.7	6.9	29.8	7.1	1.6	7.4	1.4
AA12-04	Gjuve	122	82	222	181	8	205	233	84	3	85	23	4.8	12.4	2.1	11.1	3.2	1.3	3.8	0.7
AA12-12	Gjuve	104	94	487	159	8	186	210	119	5	131	30	8.5	21.4	3.5	17.1	4.8	1.6	5.3	1.0
AA12-14	Gjuve	87	65	89	154	5	226	215	81	3	87	22	4.8	12.5	2.2	11.1	3.4	1.3	3.8	0.7
AA12-16	Gjuve	153	100	86	59	12	171	227	102	6	186	36	16.0	37.3	5.5	25.5	6.5	1.9	6.8	1.3
AA12-19	Gjuve	26	65	38	95	1	329	299	121	4	143	33	7.5	21.1	3.4	17.7	5.2	1.8	6.1	1.2
AA12-20	Gjuve	263	78	44	75	15	262	270	146	7	285	46	18.5	46.7	7.4	36.3	9.1	2.8	9.3	1.6
AA12-05	Morgedal	621	70	38	93	24	231	295	143	6	226	36	16.7	40.6	6.2	29.7	7.3	2.4	7.5	1.3
AA12-07	Morgedal	170	63	57	83	17	146	276	162	7	232	38	17.0	41.4	6.4	30.8	7.7	2.5	8.0	1.4
AA12-08	Morgedal	71	74	63	113	5	189	275	143	4	155	33	10.7	26.6	4.3	20.8	5.8	2.0	6.3	1.2
AA12-09	Morgedal	243	70	68	47	29	230	293	110	10	225	46	28.0	67.5	9.2	38.7	8.9	1.9	9.1	1.7
AA12-13	Morgedal	83	88	4	58	9	278	241	152	9	217	46	24.2	57.3	8.0	34.3	8.4	1.9	8.7	1.7
AA12-15	Morgedal	244	82	13	113	27	246	231	148	7	200	35	13.7	34.2	5.2	25.2	6.5	2.1	7.0	1.3
AA12-21	Morgedal	493	82	26	18	54	176	188	139	15	478	82	42.0	97.5	14.3	62.4	14.8	3.0	15.2	2.8

Sample*	Formation	Dy ppm	Ho ppm	Er ppm	Tm ppm	Yb ppm	Lu ppm	Ga ppm	W ppm	Pb ppm	Th ppm	U ppm
AA12-03	Gjuve	8.4	1.7	5.0	0.7	4.6	0.7	16	61	4	5	2
AA12-04	Gjuve	4.5	0.9	2.6	0.4	2.4	0.4	15	44	3	1	1
AA12-12	Gjuve	6.0	1.2	3.5	0.5	3.2	0.5	18	123	4	2	2
AA12-14	Gjuve	4.4	0.9	2.5	0.4	2.3	0.4	17	111	4	2	1
AA12-16	Gjuve	7.3	1.5	4.1	0.6	3.7	0.6	18	308	6	3	3
AA12-19	Gjuve	7.0	1.4	4.0	0.6	3.7	0.6	19	112	7	2	< 1
AA12-20	Gjuve	9.2	1.8	5.0	0.7	4.4	0.7	22	170	8	2	2
AA12-05	Morgedal	7.7	1.5	4.3	0.6	3.9	0.6	22	74	6	2	2
AA12-07	Morgedal	8.2	1.6	4.5	0.7	4.0	0.6	22	51	8	4	2
AA12-08	Morgedal	7.1	1.4	3.9	0.6	3.6	0.6	19	74	4	2	2
AA12-09	Morgedal	10.0	2.0	5.8	0.9	5.4	0.8	22	92	9	7	3
AA12-13	Morgedal	10.1	2.0	5.9	0.9	5.5	0.8	20	127	8	7	2
AA12-15	Morgedal	7.3	1.4	4.1	0.6	3.7	0.6	22	128	6	3	1
AA12-21	Morgedal	17.1	3.5	10.1	1.5	9.7	1.5	25	307	16	10	4

Data supplement 7: U-Pb concordias of reference materials for chapter 4.



Data supplement 8: Detrital zircon U-Pb data for chapter 4.

Laboratory & Sample Preparation	
Laboratory name	NERC Isotope Geosciences Laboratory
Sample type/mineral	zircon
Sample preparation	Conventional mineral separation, 1 inch resin mount, 1μm polish to finish
Imaging	CL, 10nA, 10mm working distance (Univ of Edinburgh)
Laser ablation system	
Make, Model & type	ESI/New Wave Research, UP193SS
Ablation cell & volume	NIGL low volume cell with low effective volume (ca. 3-4cm^3), washout time ca.1sec
Laser wavelength (nm)	193nm
Pulse width (ns)	3-4ns
Fluence (J.cm^{-2})	2.0-2.2 J.cm-2
Repetition rate (Hz)	5Hz or 10Hz
Ablation duration (secs)	20 or 15 seconds
Ablation pit depth / ablation rate	~5um pit depth, measured using Keyence VHX2000 and by SEM, equivalent to ~0.07μm/pulse
Spot size (μm)	25mm
Sampling mode / pattern	Static spot ablation
Carrier gas	100% He, Ar make-up gas combined ca.50% along sample line.
Cell carrier gas flow (l/min)	0.7l/min
ICP-MS Instrument	
Make, Model & type	Nu Instruments Attom SC-SF-ICP-MS
Sample introduction	Free air aspiration of desolvator mixed with carrier gas from laser
RF power (W)	1300W
Make-up gas flow (l/min)	0.7l/min Ar
Detection system	Discrete dynode MassCom ion counter
Masses measured	202, 204, 206, 207, 208, 232, 235
Integration time per peak (ms)	202, 204, 206, 208, 232 all 200us; 207 and 235 3ms (40 sweeps per cycle)
Total integration time per reading (secs) Sensitivity / Efficiency (%, element)	~0.3 seconds ~0.3%

IC Dead time (ns)	15ns
Data Processing	
Gas blank	60 second on-peak zero subtracted
Calibration strategy	91500 and GJ1 used as primary reference materials
Reference Material info	91500 (Wiedenbeck et al 1995) GJ1 $^{206}Pb/^{238}U$ 602.3 ± 1Ma, $^{207}Pb/^{206}Pb$ 609.2 ± 0.7Ma (in-house TIMS, unpublished)
Data processing package used / Correction for LIEF	Nu Instruments TRA acquisition software, in-house spreadsheet data processing
Mass discrimination	$^{207}Pb/^{206}Pb$ and $^{206}Pb/^{238}U$ normalised to reference material
Common-Pb correction, composition and uncertainty	No common-Pb correction applied to the data
Uncertainty level & propagation	Ages in the data table are quoted at 2sigma absolute, propagation is by quadratic addition. External reproducibility of reference material, excess variance, and decay constant uncertainties are also propagated.

			systematic uncertainties (1s %		206/238	207/235	207/206					
			age uncertainty primary ref. Ma		0.0447	0.0432	0.0136		ThO=	<0.5%		
			long term scatter/variance		1	1	0.25		UO=	<0.5%		
			decay constant uncertainties		0.05	0.1	0.11				Tera-Was	
			common-Pb compositional vari		1	1	1				(not common le	

Sample	Grain	^{204}Pb	^{206}Pb	^{207}Pb	^{208}Pb	^{232}Th	^{235}U	Th/U	Pbppm	Thppm	Uppm	$^{238}U/^{206}Pb$	1σ %
CS12-18	69	182	311768	34821	39289	196192	7322	0.3	48.4	48.8	144.7	2.903	1.613
CS12-18	66	67	81658	6341	10177	83119	3414	0.3	12.7	20.7	67.4	5.151	1.532
CS12-18	119	158	277467	26299	41897	300505	8461	0.4	43.1	74.8	167.2	3.649	1.718
CS12-18	126	-46	85868	6497	16872	178575	3556	0.6	13.3	44.4	70.3	5.082	1.777
CS12-18	98	-29	286459	29938	36193	213178	7393	0.4	44.5	53.0	146.1	3.120	1.442
CS12-18	109	34	181314	14953	20994	199396	5842	0.4	28.2	49.6	115.4	4.235	1.780
CS12-18	132	101	108471	8635	9629	97927	3998	0.3	16.9	24.4	79.0	4.667	1.781
CS12-18	123	212	163928	12720	25112	242304	6782	0.4	25.5	60.3	134.0	5.131	1.455
CS12-18	107	234	49603	3944	8598	75961	1889	0.5	7.7	18.9	37.3	4.814	1.801
CS12-18	114	158	244912	21374	27848	274061	8192	0.4	38.1	68.2	161.8	4.117	1.510
CS12-18	31	209	171299	13136	35332	301189	7034	0.5	26.6	74.9	139.0	5.160	1.452
CS12-18	78	63	41912	3210	3808	33268	1706	0.2	6.5	8.3	33.7	5.192	2.342
CS12-18	43	626	189905	17930	39122	268399	5613	0.6	29.5	66.8	110.9	3.757	1.654
CS12-18	87	-263	348154	27012	64388	580236	13960	0.5	54.1	144.3	275.8	5.067	1.479
CS12-18	124	126	171681	13648	29853	326255	7105	0.6	26.7	81.2	140.4	5.041	1.687
CS12-18	134	-92	237142	47925	27702	98881	3448	0.4	36.9	24.6	68.1	1.770	1.438
CS12-18	49	99	82030	6572	13415	117227	3058	0.5	12.7	29.2	60.4	4.769	1.675
CS12-18	130	279	385433	36151	28235	216659	11377	0.2	59.9	53.9	224.8	3.717	1.887
CS12-18	6	106	263629	28803	66678	441914	6427	0.9	41.0	109.9	127.0	3.082	1.367
CS12-18	140	7	291431	22782	26600	247108	11957	0.3	45.3	61.5	236.2	5.093	1.562
CS12-18	56	-160	377103	35594	70012	413460	11715	0.4	58.6	102.9	231.4	3.826	1.565
CS12-18	92	41	488706	52953	87646	541861	12690	0.5	75.9	134.8	250.7	3.156	1.548
CS12-18	13	626	189894	17930	39154	268402	5613	0.6	29.5	66.8	110.9	3.781	1.654
CS12-18	33	-142	67227	5227	10041	92948	2702	0.4	10.4	23.1	53.4	5.137	1.865
CS12-18	128	-103	313439	29675	36892	270467	9622	0.4	48.7	67.3	190.1	3.776	1.584
CS12-18	65	-13	282347	26911	30831	192581	8286	0.3	43.9	47.9	163.7	3.691	1.577

CS12-18	7	-125	257077	29941	33709	207294	5811	0.4	39.9	51.6	114.8	2.906	1.549
CS12-18	73	295	119888	9256	14973	120658	5041	0.3	18.6	30.0	99.6	5.223	1.480
CS12-18	19	8	81901	6577	13356	117671	3060	0.5	12.7	29.3	60.5	4.810	1.678
CS12-18	85	266	125406	11882	16939	112441	3697	0.4	19.5	28.0	73.0	3.716	1.551
CS12-18	36	-50	226320	19531	75154	587212	7936	0.9	35.2	146.1	156.8	4.331	1.632
CS12-18	116	428	31644	2499	4901	52496	1311	0.5	4.9	13.1	25.9	5.135	2.372
CS12-18	133	-195	122818	10575	18248	168059	4330	0.5	19.1	41.8	85.5	4.327	1.717
CS12-18	37	287	195931	16646	35183	284318	6787	0.5	30.4	70.7	134.1	4.443	1.516
CS12-18	105	-193	210038	21796	60256	406077	5579	0.9	32.6	101.0	110.2	3.381	1.438
CS12-18	108	9	44732	3519	5364	50351	1890	0.3	7.0	12.5	37.3	5.160	1.999
CS12-18	41	-190	181543	14630	24598	222471	7518	0.4	28.2	55.3	148.5	5.129	1.707
CS12-18	48	-83	257032	34481	71615	318167	5188	0.8	39.9	79.2	102.5	2.540	1.504
CS12-18	113	-41	364914	36220	76258	611845	10779	0.7	56.7	152.2	213.0	3.601	1.727
CS12-18	122	288	119869	12255	36421	248269	3230	1.0	18.6	61.8	63.8	3.422	1.793
CS12-18	44	532	379727	36264	81941	543011	11526	0.6	59.0	135.1	227.7	3.788	1.551
CS12-18	30	-64	266021	22020	36253	288182	10275	0.4	41.3	71.7	203.0	4.822	1.492
CS12-18	137	105	316944	26111	30301	323634	12374	0.3	49.3	80.5	244.5	4.746	1.525
CS12-18	84	264	413433	42756	54294	295516	10913	0.3	64.2	73.5	215.6	3.364	1.557
CS12-18	45	84	83902	6695	10805	93973	3216	0.4	13.0	23.4	63.5	4.959	1.524
CS12-18	139	-68	962437	84076	13845	97100	33742	0.0	149.6	24.2	666.6	4.307	1.658
CS12-18	144	194	177594	18255	55151	318576	5256	0.8	27.6	79.3	103.8	3.544	1.692
CS12-18	11	-190	181532	14630	24630	222474	7518	0.4	28.2	55.3	148.5	5.162	1.707
CS12-18	94	275	235414	22231	28934	229075	7141	0.4	36.6	57.0	141.1	3.829	1.679
CS12-18	18	-92	256224	34366	71286	320713	5164	0.8	39.8	79.8	102.0	2.551	1.493
CS12-18	14	532	379715	36265	81973	543014	11526	0.6	59.0	135.1	227.7	3.812	1.551
CS12-18	64	130	299434	34171	64200	353243	7375	0.6	46.5	87.9	145.7	3.078	1.484
CS12-18	142	46	22875	1803	4622	38252	945	0.5	3.6	9.5	18.7	5.201	2.010
CS12-18	91	-271	90431	7336	16938	143246	3857	0.5	14.1	35.6	76.2	5.224	1.580
CS12-18	5	320	101196	9153	12750	112717	3562	0.4	15.7	28.0	70.4	4.325	1.781
CS12-18	1	299	155702	20535	23560	133699	3201	0.5	24.2	33.3	63.2	2.622	1.457
CS12-18	131	60	512322	46820	74542	613994	16945	0.5	79.6	152.7	334.8	4.080	1.552
CS12-18	15	84	83890	6695	10837	93976	3215	0.4	13.0	23.4	63.5	4.991	1.524

CS12-18	57	-64	149856	15654	23642	129659	4128	0.4	23.3	32.3	81.6		3.434	1.753
CS12-18	72	181	270733	29209	55091	272681	7071	0.5	42.1	67.8	139.7		3.262	1.728
CS12-18	70	92	597555	70594	98104	493068	14453	0.4	92.9	122.7	285.5		2.959	1.448
CS12-18	32	-45	59390	4595	10096	100062	2488	0.5	9.2	24.9	49.2		5.363	1.396
CS12-18	8	-99	347549	37948	36792	233397	8795	0.3	54.0	58.1	173.8		3.206	1.466
CS12-18	79	65	171541	16827	26070	150210	5120	0.4	26.7	37.4	101.2		3.725	1.664
CS12-18	104	96	369435	34075	49587	426440	12471	0.4	57.4	106.1	246.4		4.119	1.729
CS12-18	143	-154	83954	6757	10245	92609	3665	0.3	13.0	23.0	72.4		5.220	1.888
CS12-18	42	-370	184235	22612	39753	209900	4084	0.6	28.6	52.2	80.7		2.848	1.620
CS12-18	103	-208	129288	10414	20144	200572	5417	0.5	20.1	49.9	107.0		5.106	1.680
CS12-18	77	-121	232141	22297	26842	177284	7374	0.3	36.1	44.1	145.7		3.862	1.453
CS12-18	55	-113	286550	31433	25089	128985	7407	0.2	44.5	32.1	146.3		3.219	1.653
CS12-18	86	3	120020	9555	13081	110875	5217	0.3	18.7	27.6	103.1		5.270	1.683
CS12-18	54	83	247664	21050	17647	123591	8856	0.2	38.5	30.7	175.0		4.576	1.553
CS12-18	12	-370	184224	22613	39785	209903	4084	0.6	28.6	52.2	80.7		2.866	1.620
CS12-18	111	218	97460	9197	12732	93277	3077	0.4	15.1	23.2	60.8		3.893	1.710
CS12-18	110	230	307278	27233	37994	334568	10837	0.4	47.8	83.2	214.1		4.328	1.422
CS12-18	127	-140	104931	10737	21951	158512	2969	0.7	16.3	39.4	58.7		3.489	1.662
CS12-18	59	156	34689	2761	8906	76110	1428	0.7	5.4	18.9	28.2		5.295	2.095
CS12-18	3	-299	154984	12779	22887	227984	5965	0.5	24.1	56.7	117.8		4.859	1.439
CS12-18	74	-308	385230	41484	78934	427960	10010	0.5	59.9	106.5	197.8		3.283	1.527
CS12-18	25	-113	286538	31434	25121	128987	7407	0.2	44.5	32.1	146.3		3.239	1.653
CS12-18	4	356	520902	42218	162497	1620856	20280	1.0	80.9	403.2	400.7		4.933	1.433
CS12-18	82	213	146039	12806	12874	88104	5103	0.2	22.7	21.9	100.8		4.354	1.447
CS12-18	24	83	247652	21050	17679	123594	8856	0.2	38.5	30.7	175.0		4.606	1.553
CS12-18	28	-137	493430	47395	64305	401977	15510	0.3	76.7	100.0	306.4		3.882	1.541
CS12-18	115	85	273162	26576	33415	234598	8564	0.3	42.4	58.4	169.2		3.796	1.572
CS12-18	90	136	715943	59758	106333	900635	28050	0.4	111.3	224.1	554.2		4.892	1.571
CS12-18	135	512	334255	37873	67896	453852	8626	0.7	51.9	112.9	170.4		3.173	2.105
CS12-18	97	-72	176707	14227	16759	159228	7560	0.3	27.5	39.6	149.4		5.274	1.649
CS12-18	89	-298	108314	11136	30980	175257	3060	0.7	16.8	43.6	60.5		3.532	1.843
CS12-18	100	133	85508	6788	12599	116133	3640	0.4	13.3	28.9	71.9		5.215	1.704

CS12-18	75	61	387626	40083	131866	732830	10655	0.9	60.2	182.3	210.5	3.508	1.644
CS12-18	58	226	229370	19101	33292	249134	8461	0.4	35.6	62.0	167.2	4.702	1.849
CS12-18	120	151	502674	49894	78052	726621	15486	0.6	78.1	180.8	306.0	3.805	1.503
CS12-18	2	-41	72091	5919	11995	127086	2775	0.6	11.2	31.6	54.8	4.825	1.733
CS12-18	95	584	1492486	176869	125410	629682	37201	0.2	231.9	156.6	735.0	3.066	1.723
CS12-18	81	-78	74502	5932	12862	101428	3150	0.4	11.6	25.2	62.2	5.314	1.752
CS12-18	34	164	926912	107154	114063	607652	24483	0.3	144.0	151.2	483.7	3.232	1.705
CS12-18	17	463	568574	45546	94937	861078	23018	0.5	88.4	214.2	454.8	5.215	1.709
CS12-18	52	-38	247969	20373	42530	363017	9907	0.5	38.5	90.3	195.7	5.003	1.647
CS12-18	47	478	577061	45720	96298	858249	23099	0.5	89.7	213.5	456.4	5.187	1.740
CS12-18	101	207	81669	7926	8835	56247	2582	0.3	12.7	14.0	51.0	3.921	1.810
CS12-18	51	189	33744	2703	9086	89531	1428	0.8	5.2	22.3	28.2	5.325	2.168
CS12-18	10	-278	291015	33852	17530	99133	7179	0.2	45.2	24.7	141.8	3.151	1.374
CS12-18	102	153	726035	83851	39810	229494	18112	0.2	112.8	57.1	357.8	3.163	1.489
CS12-18	63	160	108349	8667	17885	157641	4659	0.4	16.8	39.2	92.0	5.308	1.692
CS12-18	22	-9	248321	20591	42514	362543	9831	0.5	38.6	90.2	194.2	5.036	1.678
CS12-18	93	-217	30437	2485	4537	37086	1273	0.4	4.7	9.2	25.2	5.281	2.087
CS12-18	71	298	128576	11052	16144	108958	4585	0.3	20.0	27.1	90.6	4.604	1.902
CS12-18	39	-247	103360	10075	14462	99376	3355	0.4	16.1	24.7	66.3	4.032	1.659
CS12-18	9	-115	300908	37534	51740	285956	7058	0.5	46.8	71.1	139.4	2.958	1.562
CS12-18	112	40	25151	1983	2948	27723	1030	0.3	3.9	6.9	20.4	5.252	2.263
CS12-18	53	367	220399	19587	43914	310008	8005	0.5	34.2	77.1	158.2	4.598	1.508
CS12-18	88	573	880668	115121	111008	600019	20097	0.4	136.9	149.3	397.1	2.871	1.739
CS12-18	23	424	220360	19445	44107	311150	8018	0.5	34.2	77.4	158.4	4.639	1.557
CS12-18	21	26	33461	2704	9047	88901	1420	0.8	5.2	22.1	28.1	5.378	2.158
CS12-18	26	-219	18540	1482	5291	45245	789	0.7	2.9	11.3	15.6	5.432	2.119
CS12-18	67	543	531539	52462	98681	635438	16656	0.5	82.6	158.1	329.1	3.907	1.525
CS12-18	16	-117	288922	23096	32123	270623	12053	0.3	44.9	67.3	238.1	5.324	1.653
CS12-18	46	-147	287921	23082	31759	268722	12067	0.3	44.7	66.9	238.4	5.317	1.601
CS12-18	99	78	149950	14143	26222	188244	4983	0.5	23.3	46.8	98.4	4.123	1.565
CS12-18	60	286	682293	79071	98413	463496	18233	0.3	106.0	115.3	360.2	3.271	2.163
CS12-18	125	487	1050481	123015	161864	1037752	27244	0.5	163.2	258.2	538.2	3.267	1.793

CS12-18	27	218	283126	27765	37237	247271	9032	0.3	44.0	61.5	178.5		4.103	1.554
CS12-18	61	91	450618	39630	34778	310649	17876	0.2	70.0	77.3	353.2		4.902	1.895
CS12-18	96	398	797784	76063	120126	909621	28847	0.4	124.0	226.3	569.9		4.358	1.638
CS12-18	76	299	212546	17348	25341	211057	9123	0.3	33.0	52.5	180.2		5.389	1.732
CS12-18	145	421	140692	11930	23709	231136	5799	0.5	21.9	57.5	114.6		5.116	1.857
CS12-18	50	222	149991	15475	20725	226020	4787	0.6	23.3	56.2	94.6		3.999	1.465
CS12-18	129	-77	35003	3285	15490	121243	1249	1.2	5.4	30.2	24.7		4.422	1.926
CS12-18	118	358	130625	11400	23669	234984	5528	0.5	20.3	58.5	109.2		5.181	1.783
CS12-18	20	206	148872	15382	20545	223584	4760	0.6	23.1	55.6	94.0		4.034	1.461
CS12-18	62	322	495174	42079	89769	831035	20929	0.5	76.9	206.7	413.5		5.362	1.908
CS12-18	35	645	952813	99865	168959	996013	31235	0.4	148.1	247.8	617.1		4.093	1.576
CS12-18	117	215	50541	4522	7364	98482	2166	0.6	7.9	24.5	42.8		5.225	2.050
CS12-18	80	1410	1265221	128983	83198	231236	46742	0.1	196.6	57.5	923.5		4.581	1.601
CS12-18	136	638	671174	65633	93301	718021	25990	0.3	104.3	178.6	513.5		4.787	1.453
CS12-18	40	1155	992872	107144	132957	729010	33001	0.3	154.3	181.4	652.0		4.199	1.645
CS12-18	138	1133	678464	87628	125709	594105	19204	0.4	105.4	147.8	379.4		3.501	1.705
CS12-18	38	748	613177	68609	100846	499913	21993	0.3	95.3	124.4	434.5		4.500	1.597
CS12-18	83	616	450428	46941	77940	554545	19836	0.4	70.0	138.0	391.9		5.536	1.673
CS12-18	141	2095	910157	98957	223837	1923260	44062	0.5	141.4	478.5	870.5		5.909	1.705
CS12-18	121	1537	800889	92801	246358	2327359	37401	0.8	124.5	579.0	738.9		5.719	1.518
CS12-18	29	3277	1133021	133485	240826	1128609	56934	0.2	176.1	280.8	1124.8		6.396	1.618
CS12-18	68	1324	135012	32348	77473	90723	4237	0.3	21.0	22.6	83.7		3.871	1.473
CS12-18	106	3119	873500	106169	226501	1725026	48114	0.5	135.7	429.1	950.6		6.766	2.908
CS12-20	129	166	539847	41517	88304	837040	20862	0.6	89.2	246.4	445.6		4.975	1.294
CS12-20	5	-362	1213866	95424	205577	1805869	45335	0.5	200.5	531.6	968.3		4.966	1.505
CS12-20	51	289	295377	23516	29361	230908	11504	0.3	48.8	68.0	245.7		5.005	1.553
CS12-20	66	68	834620	64183	105627	962204	31270	0.4	137.9	283.3	667.9		5.028	1.356
CS12-20	71	190	1169272	91562	212799	1939382	44822	0.6	193.1	570.9	957.3		4.990	1.332
CS12-20	68	-98	187609	14567	20615	203424	7326	0.4	31.0	59.9	156.5		5.121	1.597
CS12-20	45	-9	795571	63444	150520	1280288	29885	0.6	131.4	376.9	638.3		4.957	1.556
CS12-20	73	18	97004	7755	8536	87293	3710	0.3	16.0	25.7	79.2		5.102	1.517

CS12-20	60	451	124409	9845	13449	119226	4811	0.3	20.5	35.1	102.8	5.057	1.404
CS12-20	126	335	171362	13302	29343	277428	6660	0.6	28.3	81.7	142.2	5.028	1.514
CS12-20	25	237	124375	9704	12457	87923	4863	0.2	20.5	25.9	103.9	5.228	1.563
CS12-20	46	-204	404580	42260	40222	233906	10412	0.3	66.8	68.9	222.4	3.351	1.559
CS12-20	121	81	145394	11342	13525	103973	5873	0.2	24.0	30.6	125.4	5.229	1.536
CS12-20	86	-84	270582	21214	35977	305195	10860	0.4	44.7	89.8	232.0	5.226	1.404
CS12-20	131	-69	553907	43500	82854	772650	21920	0.5	91.5	227.5	468.2	5.114	1.441
CS12-20	37	69	76375	6076	9450	76792	3025	0.3	12.6	22.6	64.6	5.128	2.044
CS12-20	52	513	197889	15783	24974	225580	7904	0.4	32.7	66.4	168.8	5.123	1.564
CS12-20	35	107	76684	6085	9973	58779	3152	0.3	12.7	17.3	67.3	5.218	1.696
CS12-20	41	-13	195551	15700	22051	186959	7787	0.3	32.3	55.0	166.3	5.139	1.563
CS12-20	2-rim	40	176213	14012	18920	190064	6888	0.4	29.1	56.0	147.1	5.152	1.492
CS12-20	78	66	357012	28328	38567	345833	14078	0.3	59.0	101.8	300.7	5.127	1.615
CS12-20	130	185	104371	8218	12867	120467	4214	0.4	17.2	35.5	90.0	5.159	1.525
CS12-20	38	57	132320	10550	17711	140921	5241	0.4	21.9	41.5	111.9	5.119	1.410
CS12-20	40	243	116132	9353	10755	94015	4478	0.3	19.2	27.7	95.7	5.053	1.598
CS12-20	23	170	204307	16037	21676	156799	8092	0.3	33.7	46.2	172.8	5.225	1.490
CS12-20	69	51	149975	11869	15544	151801	6095	0.3	24.8	44.7	130.2	5.233	1.605
CS12-20	91	205	353207	33731	23569	166294	10319	0.2	58.3	49.0	220.4	3.862	1.261
CS12-20	10	-92	188309	14848	21448	160881	7396	0.3	31.1	47.4	158.0	5.222	1.278
CS12-20	3-core	-58	680607	55352	106460	969391	26085	0.5	112.4	285.4	557.1	5.021	1.441
CS12-20	109	120	713503	55948	73524	656907	27688	0.3	117.8	193.4	591.4	5.142	1.330
CS12-20	72	399	90247	7111	7682	78754	3609	0.3	14.9	23.2	77.1	5.210	1.730
CS12-20	62	27	121602	9791	12564	118888	4951	0.3	20.1	35.0	105.8	5.199	1.505
CS12-20	58	-217	256639	20433	30562	240190	9936	0.3	42.4	70.7	212.2	5.138	1.453
CS12-20	124	417	79028	6183	7273	50879	3205	0.2	13.1	15.0	68.4	5.219	1.926
CS12-20	18	314	158596	12392	19506	119687	6346	0.3	26.2	35.2	135.5	5.259	1.376
CS12-20	92	374	388160	30759	60227	446970	14974	0.4	64.1	131.6	319.8	5.115	1.703
CS12-20	63	0	376616	32780	45292	368301	12619	0.4	62.2	108.4	269.5	4.349	2.175
CS12-20	67	91	340945	32824	39751	266687	9975	0.4	56.3	78.5	213.1	3.810	1.399
CS12-20	27	310	662218	52000	91528	491848	26731	0.3	109.4	144.8	570.9	5.335	1.338
CS12-20	11	-68	1008687	79347	198152	1424399	39564	0.5	166.6	419.3	845.0	5.189	1.462

CS12-20	47	166	222094	17747	36778	313605	8640	0.5	36.7	92.3	184.5	5.016	1.517
CS12-20	97	218	205562	15752	24647	155497	8472	0.3	34.0	45.8	180.9	5.341	1.538
CS12-20	85	-257	62756	5114	6601	63432	2642	0.3	10.4	18.7	56.4	5.342	1.739
CS12-20	119	64	158228	12539	16936	135691	6558	0.3	26.1	39.9	140.1	5.312	1.541
CS12-20	44	478	185432	14831	25390	228161	7238	0.4	30.6	67.2	154.6	5.195	1.413
CS12-20	54	356	359448	29286	58881	513704	14808	0.5	59.4	151.2	316.3	5.297	1.432
CS12-20	15	-329	189730	14816	22372	170175	7417	0.3	31.3	50.1	158.4	5.269	1.464
CS12-20	120	254	1015458	82929	159559	1083413	42005	0.4	167.7	319.0	897.1	5.202	1.677
CS12-20	34	-150	93622	7349	8669	46837	3742	0.2	15.5	13.8	79.9	5.286	1.565
CS12-20	8	-36	1197028	94220	141813	1103576	47323	0.3	197.7	324.9	1010.7	5.235	1.383
CS12-20	82	163	279365	21705	44904	384964	11433	0.5	46.1	113.3	244.2	5.295	1.433
CS12-20	43	499	367006	33273	25143	208838	11987	0.2	60.6	61.5	256.0	4.251	1.514
CS12-20	24	-51	61583	4857	6434	44739	2524	0.2	10.2	13.2	53.9	5.302	1.608
CS12-20	94	-128	131851	10329	16237	113247	5424	0.3	21.8	33.3	115.9	5.364	1.568
CS12-20	108	-136	1615999	128459	303143	2355408	63857	0.5	266.9	693.4	1363.9	5.190	1.519
CS12-20	114	-180	88882	7001	8301	51355	3756	0.2	14.7	15.1	80.2	5.394	1.914
CS12-20	84	270	85033	6888	10318	101798	3488	0.4	14.0	30.0	74.5	5.180	1.576
CS12-20	36	105	287627	22175	36590	223366	11600	0.3	47.5	65.8	247.8	5.425	1.415
CS12-20	122	267	106571	8564	11409	96535	4296	0.3	17.6	28.4	91.8	5.256	1.679
CS12-20	6a	115	117750	9463	13531	120487	4718	0.4	19.4	35.5	100.8	5.310	1.714
CS12-20	125	-165	1503614	118910	187892	1751026	63795	0.4	248.3	515.5	1362.6	5.294	1.784
CS12-20	117	-183	106768	8502	10757	81118	4328	0.3	17.6	23.9	92.4	5.270	1.649
CS12-20	64	149	117823	9619	11985	117631	4865	0.3	19.5	34.6	103.9	5.191	1.460
CS12-20	57	-162	635853	50529	93854	644721	25170	0.4	105.0	189.8	537.6	5.367	1.474
CS12-20	79	178	176660	14576	22897	187831	7113	0.4	29.2	55.3	151.9	5.132	1.528
CS12-20	20	222	106638	8503	9145	60617	4419	0.2	17.6	17.8	94.4	5.388	1.859
CS12-20	9	81	850289	68344	139182	922049	33074	0.4	140.4	271.4	706.4	5.245	1.449
CS12-20	115	158	120428	9477	14852	106722	4895	0.3	19.9	31.4	104.6	5.287	1.542
CS12-20	30	413	270795	21764	30430	162064	11301	0.2	44.7	47.7	241.4	5.361	1.481
CS12-20	31	-55	124448	9822	15282	85267	5095	0.2	20.6	25.1	108.8	5.395	1.505
CS12-20	14	-114	217628	19245	18335	120164	7448	0.2	35.9	35.4	159.1	4.486	1.444
CS12-20	110	95	400439	30982	63394	535141	15417	0.5	66.1	157.5	329.3	5.175	1.710

CS12-20	81	115	1015808	81235	188692	1407957	41810	0.5	167.8	414.5	893.0		5.321	1.494
CS12-20	56	471	158439	12570	18579	122763	6480	0.3	26.2	36.1	138.4		5.354	1.555
CS12-20	102	348	74522	6003	9941	68166	3183	0.3	12.3	20.1	68.0		5.437	1.509
CS12-20	29	238	133792	10438	16991	93481	5490	0.2	22.1	27.5	117.2		5.434	1.684
CS12-20	133	-130	81686	6590	7239	68493	3262	0.3	13.5	20.2	69.7		5.244	1.650
CS12-20	48	262	822670	66950	124754	1072305	33437	0.4	135.9	315.7	714.2		5.219	1.629
CS12-20	89	110	594077	48097	83521	584783	23986	0.3	98.1	172.2	512.3		5.210	1.491
CS12-20	76	63	89100	7165	9495	75536	3732	0.3	14.7	22.2	79.7		5.424	1.582
CS12-20	98	69	142639	11381	19767	128510	5999	0.3	23.6	37.8	128.1		5.444	1.750
CS12-20	53	-8	93427	7519	8641	75763	3873	0.3	15.4	22.3	82.7		5.337	1.544
CS12-20	123	256	122106	9757	11723	78333	4827	0.2	20.2	23.1	103.1		5.279	1.647
CS12-20	132	394	154277	12252	15182	142740	6441	0.3	25.5	42.0	137.6		5.483	1.407
CS12-20	42	432	983404	81020	176623	1400107	38014	0.5	162.4	412.2	811.9		5.173	1.437
CS12-20	80	96	1158307	91240	168598	1148821	48667	0.3	191.3	338.2	1039.4		5.546	1.431
CS12-20	13-rim	365	579838	47605	72125	521215	23228	0.3	95.8	153.4	496.1		5.257	1.398
CS12-20	19	93	1312091	105502	235979	1385649	55205	0.3	216.7	407.9	1179.1		5.477	1.520
CS12-20	99	-228	215250	16994	14075	93203	9131	0.1	35.6	27.4	195.0		5.550	1.425
CS12-20	95	-40	382273	30630	67923	486693	16328	0.4	63.1	143.3	348.7		5.426	1.578
CS12-20	16	-188	121160	11707	15314	85025	3726	0.3	20.0	25.0	79.6		4.030	1.429
CS12-20	59	-152	363007	28960	50217	464908	15284	0.4	60.0	136.9	326.4		5.526	1.505
CS12-20	100	260	362544	30172	61162	380366	15778	0.3	59.9	112.0	337.0		5.539	1.521
CS12-20	113	308	733234	60754	115426	737574	30359	0.3	121.1	217.1	648.4		5.250	1.723
CS12-20	104	-57	203946	16483	25139	143518	8954	0.2	33.7	42.3	191.2		5.603	1.740
CS12-20	88	-176	1000732	79919	190071	1218116	42004	0.4	165.3	358.6	897.1		5.476	1.544
CS12-20	28	-115	927177	74356	143047	852575	38210	0.3	153.1	251.0	816.1		5.457	1.374
CS12-20	33	167	325008	26526	45488	330991	13143	0.3	53.7	97.4	280.7		5.395	1.450
CS12-20	96	181	842904	68451	133230	984813	36091	0.4	139.2	289.9	770.8		5.579	1.400
CS12-20	112	-43	1198161	93844	189017	1668454	51306	0.4	197.9	491.2	1095.8		5.594	1.385
CS12-20	87	-242	974359	77297	152046	975078	40655	0.3	160.9	287.1	868.3		5.580	1.448
CS12-20	1-core	222	1797892	140480	284597	2701398	77846	0.5	297.0	795.3	1662.7		5.797	1.580
CS12-20	83	-182	276770	22398	41328	313845	11827	0.4	45.7	92.4	252.6		5.487	1.308
CS12-20	70	13	1351684	109375	276741	2598411	57569	0.6	223.3	765.0	1229.6		5.554	1.415

CS12-20	17	158	1862347	150405	410251	2939300	78510	0.5	307.6	865.3	1676.8	5.538	1.320
CS12-20	49	156	111233	9333	16172	127714	4267	0.4	18.4	37.6	91.1	5.056	1.625
CS12-20	93	194	645663	52084	108187	650732	27450	0.3	106.6	191.6	586.3	5.566	1.440
CS12-20	32	185	117427	9531	10727	60387	5081	0.2	19.4	17.8	108.5	5.626	1.532
CS12-20	105	70	1133868	93081	124821	712574	47404	0.2	187.3	209.8	1012.5	5.458	1.476
CS12-20	77	-396	1319871	106812	235864	1470683	58439	0.3	218.0	433.0	1248.1	5.818	1.869
CS12-20	4-rim	-158	114104	10325	15769	123643	4356	0.4	18.8	36.4	93.0	4.980	1.591
CS12-20	12-core	367	1032933	90284	184055	1159886	40298	0.4	170.6	341.5	860.7	5.183	1.365
CS12-20	61	46	227698	18806	32282	300295	9717	0.4	37.6	88.4	207.5	5.702	1.592
CS12-20	74	167	1655051	133298	220959	1496031	75980	0.3	273.4	440.4	1622.8	6.090	1.568
CS12-20	111	72	1467331	108486	249694	3032459	83059	0.5	242.4	892.7	1774.0	7.227	1.714
CS12-20	127	515	271958	23171	26190	201238	11804	0.2	44.9	59.2	252.1	5.538	1.495
CS12-20	21	530	1397766	112577	322817	2133625	65886	0.4	230.9	628.1	1407.2	6.280	1.908
CS12-20	116	433	152848	13528	23580	158267	6265	0.3	25.2	46.6	133.8	5.341	1.534
CS12-20	50	197	374338	30486	51707	320009	18302	0.2	61.8	94.2	390.9	6.302	1.956
CS12-20	106	245	94913	8056	10941	76362	4385	0.2	15.7	22.5	93.7	5.886	1.680
CS12-20	103	9	1442990	109146	268793	2637756	83373	0.4	238.3	776.5	1780.7	7.435	1.595
CS12-20	101	477	915401	74122	211521	1375233	45639	0.4	151.2	404.9	974.8	6.457	1.515
CS12-20	65	182	1338370	105355	292710	3289598	73577	0.6	221.1	968.4	1571.5	7.094	1.227
CS12-20	75	246	1507488	117230	344422	2980033	86592	0.5	249.0	877.3	1849.4	7.431	1.529
CS12-20	90	65	1469941	111990	159504	1701447	90209	0.3	242.8	500.9	1926.7	7.962	1.881
CS12-20	128	-15	85214	8590	15394	94082	3471	0.4	14.1	27.7	74.1	5.183	1.750
CS12-20	118	426	347589	30443	33056	206594	18857	0.2	57.4	60.8	402.7	6.973	1.668
CS12-20	22	486	709716	63771	51237	179353	38833	0.1	117.2	52.8	829.4	7.069	1.638
CS12-20	55	523	1420166	104491	352574	5189896	108887	0.7	234.6	1527.9	2325.6	10.241	1.562
CS12-20	39	459	622307	46364	80619	953875	49845	0.3	102.8	280.8	1064.6	10.410	1.982
CS12-20	6b	825	137653	22742	45349	113348	4368	0.4	22.7	33.4	93.3	4.186	2.160
CS12-20	26	188	1244026	92199	193175	2064307	102323	0.3	205.5	607.7	2185.4	11.147	1.608
CS12-20	7	1925	1535361	130970	316369	4159033	134428	0.4	253.6	1224.4	2871.1	11.469	1.634
CS12-20	107	1128	448629	46822	89003	575063	37433	0.2	74.1	169.3	799.5	10.703	1.680
CS12-19	108	-114	79156	6105	7540	84686	3016	0.4	13.1	24.9	64.4	4.923	1.696

CS12-19	143	327	225325	20795	28856	222393	6552	0.5	37.2	65.5	139.9		3.639	1.498
CS12-19	53	481	496295	45933	52556	340383	14404	0.3	82.0	100.2	307.6		3.678	1.698
CS12-19	94	-205	769846	81012	230804	1583865	18815	1.2	127.2	466.3	401.9		3.146	1.525
CS12-19	11	-35	629934	69467	72049	398176	14352	0.4	104.0	117.2	306.5		2.936	1.476
CS12-19	132	-386	172554	17497	52908	384090	4525	1.2	28.5	113.1	96.6		3.294	1.627
CS12-19	70	75	455086	45632	43202	297470	11614	0.4	75.2	87.6	248.1		3.349	1.525
CS12-19	130	-105	316654	29239	34748	281244	9242	0.4	52.3	82.8	197.4		3.757	1.427
CS12-19	102	0	303001	30848	90821	654122	8064	1.1	50.0	192.6	172.2		3.362	1.610
CS12-19	127	-80	172502	16350	60752	447720	5127	1.2	28.5	131.8	109.5		3.707	1.603
CS12-19	13	-79	117884	11224	15866	97222	3427	0.4	19.5	28.6	73.2		3.734	1.661
CS12-19	115	175	541132	64434	56590	342884	11872	0.4	89.4	100.9	253.6		2.768	1.604
CS12-19	73	70	249678	26024	36802	237533	6230	0.5	41.2	69.9	133.1		3.230	1.353
CS12-19	96	60	348719	33402	72821	560686	10297	0.8	57.6	165.1	219.9		3.701	1.568
CS12-19	120	79	462474	40066	53570	449306	15496	0.4	76.4	132.3	331.0		4.239	1.593
CS12-19	145	-59	292643	28827	50035	373436	8260	0.6	48.3	109.9	176.4		3.542	1.630
CS12-19	17	270	776561	72600	83101	504129	22822	0.3	128.3	148.4	487.4		3.737	1.440
CS12-19	80	34	448108	39565	47145	396456	14645	0.4	74.0	116.7	312.8		4.175	1.466
CS12-19	82	-8	226056	21509	133706	1010203	6712	2.1	37.3	297.4	143.4		3.764	1.594
CS12-19	7	-200	276637	32539	38179	191363	6231	0.4	45.7	56.3	133.1		2.850	1.589
CS12-19	107	-91	145239	11337	17888	179876	5625	0.4	24.0	53.0	120.1		5.026	1.702
CS12-19	36	-8	191454	18475	34470	222966	5732	0.5	31.6	65.6	122.4		3.726	1.535
CS12-19	30	123	174707	18555	30770	168507	4423	0.5	28.9	49.6	94.5		3.195	1.547
CS12-19	9	-76	281346	31956	76674	391772	6641	0.8	46.5	115.3	141.8		2.997	1.270
CS12-19	111	18	289635	32250	47866	312478	6833	0.6	47.8	92.0	145.9		3.026	1.531
CS12-19	34	35	335251	32056	30817	192303	9407	0.3	55.4	56.6	200.9		3.620	1.733
CS12-19	28	38	367629	34378	57416	336426	11156	0.4	60.7	99.0	238.3		3.778	1.530
CS12-19	129	166	282429	31923	26357	160580	6608	0.3	46.6	47.3	141.1		2.983	1.447
CS12-19	147	289	225255	19997	27290	214937	7618	0.4	37.2	63.3	162.7		4.216	1.461
CS12-19	131	-156	232918	27554	33747	199688	5089	0.5	38.5	58.8	108.7		2.802	1.637
CS12-19	105	111	550129	64984	71025	417465	12491	0.5	90.9	122.9	266.8		2.869	1.683
CS12-19	39	9	190897	18164	66318	430641	5774	1.0	31.5	126.8	123.3		3.813	1.574
CS12-19	24	104	259619	26061	40237	242177	7157	0.5	42.9	71.3	152.9		3.492	1.507

CS12-19	22	-85	210517	20844	40651	241063	5748	0.6	34.8	71.0	122.8		3.493	1.463
CS12-19	46	204	119540	9360	15660	191590	4891	0.5	19.7	56.4	104.5		5.179	1.490
CS12-19	153	109	86985	7418	16655	133815	3006	0.6	14.4	39.4	64.2		4.398	1.620
CS12-19	104	118	497762	39057	60887	619884	19305	0.4	82.2	182.5	412.3		5.010	1.648
CS12-19	117	-76	609655	112925	143565	619687	9185	0.9	100.7	182.4	196.2		1.915	1.600
CS12-19	136	-71	238764	20829	19554	171459	8066	0.3	39.4	50.5	172.3		4.265	1.520
CS12-19	113	-40	1091097	124426	55019	344934	25550	0.2	180.2	101.5	545.7		3.009	1.334
CS12-19	151	56	412873	42929	61305	366134	10980	0.5	68.2	107.8	234.5		3.366	1.466
CS12-19	26	227	219584	17076	23591	197365	9150	0.3	36.3	58.1	195.4		5.270	1.588
CS12-19	134	218	51480	4819	8196	65838	1582	0.6	8.5	19.4	33.8		3.902	1.681
CS12-19	125	96	274356	31081	83700	504282	6506	1.1	45.3	148.5	138.9		3.002	1.616
CS12-19	138	-130	689139	67862	87726	660407	20100	0.5	113.8	194.4	429.3		3.640	1.647
CS12-19	50	443	317727	36237	28254	148374	7496	0.3	52.5	43.7	160.1		3.002	1.489
CS12-19	128	-34	469330	44627	185136	1426921	14017	1.4	77.5	420.1	299.4		3.796	1.362
CS12-19	152	-140	220718	24199	61126	354755	5634	0.9	36.5	104.4	120.3		3.197	1.442
CS12-19	47	-37	518930	57167	85113	460854	12602	0.5	85.7	135.7	269.2		3.088	1.449
CS12-19	114	347	359708	34020	59797	505899	10831	0.6	59.4	148.9	231.3		3.846	1.500
CS12-19	20	443	194640	20424	48539	281682	5000	0.8	32.1	82.9	106.8		3.283	1.875
CS12-19	85	-58	456930	49381	75847	509465	11602	0.6	75.5	150.0	247.8		3.218	1.513
CS12-19	2	-26	146864	13706	32430	199951	4337	0.6	24.3	58.9	92.6		3.826	1.490
CS12-19	84	431	472365	54597	20543	121250	11249	0.1	78.0	35.7	240.3		2.977	1.526
CS12-19	35	462	846775	98116	42683	211350	19725	0.1	139.9	62.2	421.3		2.973	1.620
CS12-19	21	166	331673	33977	81082	474493	8981	0.7	54.8	139.7	191.8		3.445	1.437
CS12-19	83	218	238700	31063	39365	211678	4906	0.6	39.4	62.3	104.8		2.623	1.399
CS12-19	44	226	166997	15688	23780	155944	5055	0.4	27.6	45.9	108.0		3.841	1.300
CS12-19	10	321	393317	32028	54741	431697	14544	0.4	65.0	127.1	310.6		4.774	1.645
CS12-19	4	128	305780	29486	25872	150926	8996	0.2	50.5	44.4	192.1		3.719	1.766
CS12-19	32	118	859013	82834	102997	655771	26588	0.3	141.9	193.1	567.9		3.863	1.450
CS12-19	140	-72	260658	28629	43782	290299	6489	0.6	43.1	85.5	138.6		3.145	1.385
CS12-19	51	323	360785	34253	77673	569594	10901	0.7	59.6	167.7	232.8		3.810	1.721
CS12-19	69	459	64515	6615	15320	108373	1778	0.8	10.7	31.9	38.0		3.525	1.553
CS12-19	118	323	357749	33890	105767	826922	10422	1.1	59.1	243.4	222.6		3.724	1.655

CS12-19	54	-130	122549	13832	37292	206360	2975	1.0	20.2	60.8	63.5	3.098	1.458
CS12-19	45	41	492486	58288	83533	427015	11405	0.5	81.3	125.7	243.6	2.918	1.308
CS12-19	121	223	282818	28114	26191	192607	8058	0.3	46.7	56.7	172.1	3.600	1.574
CS12-19	63	-13	825455	95609	54677	331511	19295	0.2	136.3	97.6	412.1	3.014	1.381
CS12-19	15	127	156619	13999	16238	107115	5205	0.3	25.9	31.5	111.2	4.179	1.654
CS12-19	149	450	327085	31695	128596	957441	9635	1.4	54.0	281.9	205.8	3.741	1.403
CS12-19	25	187	233761	25686	43955	253759	5987	0.6	38.6	74.7	127.9	3.242	1.450
CS12-19	98	-145	307643	29091	32538	231631	9132	0.3	50.8	68.2	195.1	3.817	1.842
CS12-19	97	56	193756	16989	27766	244298	6547	0.5	32.0	71.9	139.8	4.308	1.588
CS12-19	38	450	245192	26233	39172	221024	6140	0.5	40.5	65.1	131.1	3.229	1.334
CS12-19	62	138	361514	34691	80422	606632	10884	0.8	59.7	178.6	232.5	3.814	1.374
CS12-19	57	72	185261	17687	16913	110901	5460	0.3	30.6	32.6	116.6	3.807	1.435
CS12-19	124	-98	927303	85744	26234	186949	29683	0.1	153.2	55.0	634.0	4.065	1.453
CS12-19	89	-182	257652	26767	60634	426365	6986	0.8	42.6	125.5	149.2	3.465	1.683
CS12-19	150	82	351472	33199	104628	749459	10560	1.0	58.1	220.6	225.6	3.839	1.577
CS12-19	112	-75	230875	22206	56590	439820	6804	0.9	38.1	129.5	145.3	3.751	1.465
CS12-19	95	-28	160729	15341	28938	236410	4794	0.7	26.5	69.6	102.4	3.854	1.591
CS12-19	139	-39	532603	49734	62796	489162	16088	0.4	88.0	144.0	343.6	3.901	1.426
CS12-19	19	56	430680	39894	43977	275360	12888	0.3	71.1	81.1	275.3	3.887	1.525
CS12-19	42	195	586571	64341	92224	485417	14450	0.5	96.9	142.9	308.6	3.181	1.477
CS12-19	43	11	365484	34319	102689	675200	11297	0.8	60.4	198.8	241.3	3.914	1.356
CS12-19	90	205	196491	23823	52491	319746	4216	1.0	32.5	94.1	90.0	2.828	1.514
CS12-19	142	-145	1395921	184800	83183	434691	28868	0.2	230.6	128.0	616.6	2.641	1.535
CS12-19	60	-369	299663	31838	36876	214827	7916	0.4	49.5	63.2	169.1	3.326	1.795
CS12-19	14	-243	208067	16791	12292	99884	8352	0.2	34.4	29.4	178.4	5.093	1.388
CS12-19	91	-10	996188	115382	16896	152038	23942	0.1	164.5	44.8	511.4	3.064	1.540
CS12-19	61	442	281762	30692	53376	322059	7537	0.6	46.5	94.8	161.0	3.371	1.419
CS12-19	135	262	538300	51627	89895	701527	16194	0.6	88.9	206.5	345.9	3.823	1.421
CS12-19	6	80	303536	30920	42288	238516	8367	0.4	50.1	70.2	178.7	3.539	1.415
CS12-19	8	-53	438140	50545	56514	281046	10445	0.4	72.4	82.7	223.1	3.066	1.361
CS12-19	72	-177	351870	30667	13476	115121	11541	0.1	58.1	33.9	246.5	4.340	1.439
CS12-19	119	57	53539	4676	8946	89147	1922	0.6	8.8	26.2	41.1	4.562	1.849

CS12-19	31	601	1644147	168722	302862	1721679	46137	0.5	271.6	506.9	985.4	3.543	1.378
CS12-19	52	231	159802	14940	28703	204496	5090	0.6	26.4	60.2	108.7	4.023	1.415
CS12-19	1	50	291530	32641	58687	296495	7288	0.6	48.2	87.3	155.7	3.206	1.366
CS12-19	93	28	109252	11877	15766	114792	2980	0.5	18.0	33.8	63.6	3.430	1.842
CS12-19	40	35	420120	46106	86596	469934	10500	0.6	69.4	138.3	224.3	3.246	1.528
CS12-19	23	325	925878	102514	279648	1446016	23343	0.9	152.9	425.7	498.6	3.187	1.280
CS12-19	146	-218	535590	51634	64946	515466	16435	0.4	88.5	151.8	351.0	3.870	1.499
CS12-19	5	-64	411258	38596	102891	674834	12827	0.7	67.9	198.7	274.0	3.971	1.512
CS12-19	126	69	382378	37715	36308	275038	11372	0.3	63.2	81.0	242.9	3.793	1.821
CS12-19	103	324	530200	46824	40306	379991	18754	0.3	87.6	111.9	400.5	4.470	1.628
CS12-19	148	132	828494	93814	24218	205956	20804	0.1	136.8	60.6	444.3	3.197	1.595
CS12-19	12	183	133298	10659	24718	212424	5376	0.5	22.0	62.5	114.8	5.160	1.478
CS12-19	33	172	154191	13041	21999	173891	5572	0.4	25.5	51.2	119.0	4.722	1.548
CS12-19	65	79	126305	10149	22622	215882	5016	0.6	20.9	63.6	107.1	5.109	1.494
CS12-19	41	-9	714984	68607	85989	542306	22053	0.3	118.1	159.7	471.0	3.920	1.682
CS12-19	106	151	284889	25098	32316	285898	9807	0.4	47.1	84.2	209.5	4.411	1.718
CS12-19	48	-114	339651	42174	78281	410443	7726	0.7	56.1	120.8	165.0	2.900	1.461
CS12-19	86	43	504868	49653	14899	119053	14916	0.1	83.4	35.0	318.6	3.839	1.488
CS12-19	81	491	1073213	116879	351269	2204477	28161	1.1	177.3	649.0	601.5	3.362	1.407
CS12-19	137	-95	43820	4179	10031	82866	1338	0.9	7.2	24.4	28.6	3.873	1.862
CS12-19	66	255	476924	42952	58036	589376	16462	0.5	78.8	173.5	351.6	4.427	1.325
CS12-19	27	48	92405	7264	8748	90664	3875	0.3	15.3	26.7	82.8	5.450	1.518
CS12-19	56	433	513232	57830	72891	395823	12906	0.4	84.8	116.5	275.6	3.223	1.550
CS12-19	116	195	114100	10364	14833	128264	3827	0.5	18.8	37.8	81.7	4.280	1.666
CS12-19	3	21	437712	43539	202109	1226535	13459	1.3	72.3	361.1	287.5	3.918	1.448
CS12-19	141	187	881235	167156	163609	817478	14067	0.8	145.5	240.7	300.4	2.064	1.352
CS12-19	16	-155	41522	4056	24774	162361	1240	1.8	6.9	47.8	26.5	3.909	2.261
CS12-19	122	-48	93939	7524	9894	100316	3811	0.4	15.5	29.5	81.4	5.268	1.560
CS12-19	87	17	150952	16190	30096	206668	4123	0.7	24.9	60.8	88.1	3.496	1.670
CS12-19	144	217	541119	51591	94661	807193	17323	0.6	89.4	237.6	370.0	4.094	1.429
CS12-19	74	188	310363	57133	48036	304907	5225	0.8	51.3	89.8	111.6	2.175	1.541
CS12-19	109	140	105725	8468	11460	118051	4536	0.4	17.5	34.8	96.9	5.477	1.559

CS12-19	101	182	428403	42940	26011	265270	13569	0.3	70.8	78.1	289.8	4.028	1.592
CS12-19	123	126	401620	37692	61106	436299	13641	0.4	66.3	128.4	291.4	4.319	1.573
CS12-19	68	283	232647	23712	32415	241479	7223	0.5	38.4	71.1	154.3	3.953	1.370
CS12-19	75	-403	170424	16992	51813	404849	5525	1.0	28.1	119.2	118.0	4.071	1.550
CS12-19	55	372	519389	49841	114257	767972	17610	0.6	85.8	226.1	376.1	4.262	1.608
CS12-19	64	182	242265	26098	46920	326780	6887	0.7	40.0	96.2	147.1	3.670	1.434
CS12-19	133	86	1115380	127231	108160	685409	30444	0.3	184.2	201.8	650.2	3.510	1.423
CS12-19	88	44	874100	85372	80925	723027	28320	0.4	144.4	212.9	604.9	4.197	1.735
CS12-19	110	181	826768	72578	132280	1236407	31255	0.5	136.6	364.0	667.5	4.914	1.491
CS12-19	49	409	270290	28418	55337	325386	8178	0.5	44.6	95.8	174.7	3.839	1.492
CS12-19	29	-148	29117	2676	8032	57109	1100	0.7	4.8	16.8	23.5	4.755	1.840
CS12-19	99	-117	181685	17332	30728	242163	6665	0.5	30.0	71.3	142.3	4.584	1.576
CS12-19	92	510	1121450	108000	215641	2043961	41078	0.7	185.2	601.7	877.4	4.782	1.541
CS12-19	18	398	991516	86611	302729	2352042	41243	0.8	163.8	692.4	880.9	5.375	1.198
CS12-19	71	538	866052	113676	180221	1063014	23616	0.6	143.0	312.9	504.4	3.455	1.451
CS12-19	100	616	1122965	108275	164222	1371454	42539	0.4	185.5	403.8	908.5	4.879	1.348
CS12-19	58	268	441666	37426	48641	465793	20540	0.3	72.9	137.1	438.7	5.898	2.543
CS12-19	37	583	832711	95670	94776	721371	27296	0.4	137.5	212.4	583.0	4.175	1.683
CS12-19	59	1026	1096231	110352	109882	1203136	57799	0.3	181.1	354.2	1234.5	6.545	1.563
CS12-19	67	1487	907592	84427	69094	259852	57215	0.1	149.9	76.5	1222.0	8.161	1.350
CS12-22	67	1526	3812336	278398	1222771	15678250	344124	0.5	648.4	3790.3	7716.8	12.130	1.379
CS12-22	65	1545	3562347	255621	1175204	13834560	303865	0.5	605.9	3344.6	6814.0	11.377	1.302
CS12-22	62	1779	2908446	207987	864764	11780980	245157	0.5	494.7	2848.1	5497.5	11.457	1.262
CS12-22	47	1533	2229340	165633	603940	5906449	191943	0.3	379.2	1427.9	4304.2	11.805	1.525
CS12-22	78	1152	2726899	192628	592488	8625350	224252	0.4	463.8	2085.2	5028.7	11.179	1.438
CS12-22	83	1029	4105868	303554	1235208	15366700	331579	0.5	698.4	3715.0	7435.5	10.838	1.235
CS12-22	45	1879	4265701	329012	1370876	17431910	359767	0.5	725.5	4214.2	8067.6	11.399	1.516
CS12-22	81	478	2295527	163907	486771	6064498	178213	0.4	390.4	1466.1	3996.3	10.528	1.834
CS12-22	72	798	2461005	176999	693474	7463371	192706	0.4	418.6	1804.3	4321.3	10.496	1.456
CS12-22	71	1342	3613608	262895	1042579	15178180	283413	0.6	614.6	3669.4	6355.4	10.509	1.474
CS12-22	22	876	3468895	252463	955176	10713680	273026	0.4	590.0	2590.1	6122.5	10.556	1.534

CS12-22	50	775	4004144	299759	934338	12989410	312513	0.4	681.1	3140.2	7007.9	10.426	1.246
CS12-22	77	478	2009163	143182	331090	4278108	148011	0.3	341.7	1034.2	3319.1	9.882	1.613
CS12-22	74	-87	2830423	208299	616087	9730714	212168	0.5	481.4	2352.4	4757.8	10.001	1.442
CS12-22	14	1326	2618851	198336	534120	7774162	194594	0.4	445.4	1879.4	4363.7	9.925	1.386
CS12-22	66	934	3398998	244101	880002	10079640	241715	0.4	578.1	2436.8	5420.3	9.637	1.730
CS12-22	40	895	2661330	200559	737670	6083797	198045	0.3	452.7	1470.8	4441.1	9.964	1.934
CS12-22	38	843	3004288	226848	689105	6371154	220561	0.3	511.0	1540.2	4946.0	9.788	1.313
CS12-22	61	387	2311182	172204	494780	4806133	168179	0.3	393.1	1161.9	3771.3	9.666	1.786
CS12-22	51	1368	3359350	262099	968989	9217395	244331	0.4	571.4	2228.3	5479.0	10.039	1.797
CS12-22	29	345	1734939	129816	264925	3575605	115573	0.3	295.1	864.4	2591.7	9.160	1.459
CS12-22	75	1161	2837448	212251	802020	7098013	189016	0.4	482.6	1716.0	4238.6	9.083	1.904
CS12-22	10	1414	2196006	171081	379093	5014636	153649	0.4	373.5	1212.3	3445.5	9.264	1.993
CS12-22	24	811	2187902	170280	470305	5192902	149006	0.4	372.1	1255.4	3341.4	9.230	1.433
CS12-22	9	469	2601779	200252	545489	5701564	171296	0.4	442.5	1378.4	3841.2	8.969	1.877
CS12-22	3	315	2063397	162968	285661	3787893	123678	0.3	351.0	915.7	2773.4	8.137	1.304
CS12-22	35	450	2510893	207967	411863	5044189	150819	0.4	427.1	1219.5	3382.0	8.124	1.605
CS12-22	64	367	2384495	191404	392540	4754578	138958	0.4	405.6	1149.4	3116.1	7.849	1.437
CS12-22	2	792	2745134	220657	491808	10087180	156446	0.7	466.9	2438.6	3508.2	7.808	1.316
CS12-22	20	257	1776297	138183	187471	2183660	97785	0.2	302.1	527.9	2192.8	7.370	1.713
CS12-22	4	223	2835343	221198	437041	4959966	154916	0.3	482.3	1199.1	3473.9	7.524	1.549
CS12-22	39	533	1387465	111841	264209	1889661	70331	0.3	236.0	456.8	1577.1	6.757	2.050
CS12-22	34	517	2507125	208099	357665	3644687	123310	0.3	426.4	881.1	2765.2	6.636	1.250
CS12-22	16	368	2360396	201646	349536	4607113	111780	0.4	401.5	1113.8	2506.6	6.381	1.761
CS12-22	31	187	2836118	238586	421520	4234806	133730	0.3	482.4	1023.8	2998.8	6.374	1.368
CS12-22	82	297	1474911	121033	225942	2168819	73002	0.3	250.9	524.3	1637.0	6.081	7.513
CS12-22	28	400	4271390	366057	595882	6670018	197063	0.4	726.5	1612.5	4419.1	6.204	1.328
CS12-22	44	286	2241898	192497	283682	2291822	103251	0.2	381.3	554.1	2315.3	6.231	1.412
CS12-22	25	441	2208839	191651	413533	4199164	103345	0.4	375.7	1015.2	2317.5	6.216	1.870
CS12-22	5	2552	2278731	219556	710065	3370777	111666	0.3	387.6	814.9	2504.1	6.729	1.390
CS12-22	23	474	3050645	271958	388732	3645554	126748	0.3	518.9	881.3	2842.3	5.763	1.839
CS12-22	8	198	1190680	101411	134344	1487948	47161	0.3	202.5	359.7	1057.6	5.326	1.655
CS12-22	52	83	1867069	166606	178137	1354301	71192	0.2	317.6	327.4	1596.4	5.147	1.357

CS12-22	33	179	2528210	225927	424495	3630915	94154	0.4	430.0	877.8	2111.4		5.089	1.288
CS12-22	30	-4	1381038	124409	177374	1478146	52158	0.3	234.9	357.3	1169.6		5.076	1.562
CS12-22	13	388	3201251	293102	361336	3167613	118701	0.3	544.5	765.8	2661.8		4.955	1.212
CS12-22	69	364	2784090	251430	382836	2939127	100362	0.3	473.5	710.5	2250.6		4.877	1.438
CS12-22	42	174	2852894	267376	341130	3103991	102336	0.3	485.2	750.4	2294.8		4.816	1.265
CS12-22	17	207	2348984	212681	276278	2410002	80905	0.3	399.5	582.6	1814.2		4.607	1.301
CS12-22	32	427	2183966	200558	261388	2261051	73565	0.3	371.5	546.6	1649.7		4.645	1.788
CS12-22	48	-19	2163072	199119	368279	3142897	73766	0.5	367.9	759.8	1654.2		4.634	1.312
CS12-22	55	-110	2496660	232916	289322	2389394	86709	0.3	424.6	577.6	1944.4		4.683	1.414
CS12-22	27	113	2982180	278249	365169	2979309	100755	0.3	507.2	720.3	2259.4		4.550	1.463
CS12-22	46	253	1878321	176345	214140	2229442	65332	0.4	319.5	539.0	1465.0		4.568	1.741
CS12-22	85	276	1900089	179487	292097	2233070	64369	0.4	323.2	539.9	1443.4		4.562	1.298
CS12-22	11	598	2165716	199245	329930	3380094	72348	0.5	368.4	817.1	1622.4		4.492	1.696
CS12-22	19	170	2019251	184755	299406	2352513	65816	0.4	343.4	568.7	1475.9		4.481	1.512
CS12-22	15	492	3148953	293277	306008	2458689	99925	0.3	535.6	594.4	2240.8		4.308	1.327
CS12-22	84	-17	866417	79421	90321	713344	26129	0.3	147.4	172.5	585.9		4.077	1.270
CS12-22	1	115	1620324	151639	296344	2475090	49902	0.5	275.6	598.4	1119.0		4.096	1.296
CS12-22	12	171	1875684	175232	275512	2489585	57898	0.5	319.0	601.9	1298.3		4.138	1.437
CS12-22	7	-17	779106	72651	93620	882245	23377	0.4	132.5	213.3	524.2		3.992	1.993
CS12-22	41	-67	2306353	217385	275692	2151937	68832	0.3	392.3	520.2	1543.5		4.020	1.353
CS12-22	80	-102	825844	77290	78795	593166	24253	0.3	140.5	143.4	543.9		4.011	1.362
CS12-22	63	31	483438	45760	75514	587767	14265	0.4	82.2	142.1	319.9		4.012	1.335
CS12-22	58	375	855756	78320	143926	1152525	24466	0.5	145.6	278.6	548.6		3.854	1.337
CS12-22	49	-141	1482303	140711	161318	1318765	43747	0.3	252.1	318.8	981.0		3.951	1.348
CS12-22	53	517	1132097	108486	224783	1750229	33600	0.6	192.6	423.1	753.5		4.005	1.353
CS12-22	21	196	769443	72835	108542	896602	22466	0.4	130.9	216.8	503.8		3.954	1.452
CS12-22	60	-20	1206141	114558	171650	1297407	35068	0.4	205.1	313.7	786.4		3.947	1.453
CS12-22	76	-64	1139907	107757	151818	1172044	33193	0.4	193.9	283.3	744.3		3.950	1.357
CS12-22	59	-156	1084773	101321	164648	1311337	31545	0.4	184.5	317.0	707.4		3.917	1.580
CS12-22	18	95	818249	76685	103838	848260	23580	0.4	139.2	205.1	528.8		3.871	1.275
CS12-22	79	356	721925	68567	128727	1038617	20850	0.5	122.8	251.1	467.6		3.914	1.440
CS12-22	37	-184	1331411	126296	179970	1414440	38589	0.4	226.5	341.9	865.3		3.922	1.302

CS12-22	68	-95	890705	84075	122491	889784	25645	0.4	151.5	215.1	575.1		3.916	1.436
CS12-22	73	18	1286903	119599	103108	992624	36431	0.3	218.9	240.0	816.9		3.854	1.487
CS12-22	36	96	529497	50354	61571	493846	15488	0.3	90.1	119.4	347.3		3.899	1.588
CS12-22	56	407	1375576	125331	165612	1318079	39345	0.4	234.0	318.7	882.3		3.821	1.460
CS12-22	6	110	1154063	107335	166710	1406273	32320	0.5	196.3	340.0	724.8		3.821	1.466
CS12-22	43	73	897929	83339	104340	845422	25461	0.4	152.7	204.4	571.0		3.845	1.528
CS12-22	54	41	891634	82889	115384	848452	24970	0.4	151.7	205.1	559.9		3.817	1.612
CS12-22	57	244	1438318	136589	179253	1313554	40745	0.3	244.6	317.6	913.7		3.781	1.733
CS12-22	70	4	1071699	98440	94353	687870	33549	0.2	182.3	166.3	752.3		4.220	1.542

serburg ad corrected)		Data for Wetherill plot (not common lead corrected)					Ages						Discordance
$^{207}Pb/^{206}Pb$	1σ %	$^{207}Pb/^{235}U$	1σ %	$^{206}Pb/^{238}U$	1σ %	Rho	$^{207}Pb/^{206}Pb$	2σ abs	$^{206}Pb/^{238}U$	2σ abs	$^{207}Pb/^{235}U$	2σ abs	6-38/7-6
0.109	1.104	5.195	1.955	0.344	1.613	0.764	1789.9	20.1	1908.1	53.1	1851.8	32.8	-0.07
0.075	1.300	2.015	2.009	0.194	1.532	0.674	1077.3	26.1	1143.7	32.0	1120.7	26.9	-0.06
0.093	1.110	3.495	2.046	0.274	1.718	0.792	1478.5	21.1	1561.3	47.5	1526.1	31.8	-0.06
0.076	1.168	2.070	2.127	0.197	1.777	0.791	1103.5	23.4	1157.9	37.6	1138.8	28.7	-0.05
0.105	1.123	4.624	1.828	0.320	1.442	0.689	1709.2	20.7	1792.0	45.0	1753.7	30.1	-0.05
0.085	1.432	2.754	2.285	0.236	1.780	0.723	1306.9	27.8	1366.6	43.7	1343.2	33.5	-0.05
0.080	1.408	2.373	2.270	0.214	1.781	0.729	1205.9	27.7	1251.5	40.4	1234.5	31.9	-0.04
0.077	0.905	2.060	1.713	0.195	1.455	0.774	1113.2	18.1	1147.8	30.5	1135.6	23.2	-0.03
0.079	1.177	2.275	2.151	0.208	1.801	0.794	1183.7	23.3	1216.7	39.8	1204.6	29.9	-0.03
0.087	1.172	2.918	1.912	0.243	1.510	0.704	1364.5	22.6	1401.6	37.9	1386.7	28.5	-0.03
0.077	0.833	2.047	1.674	0.194	1.452	0.801	1111.8	16.6	1141.9	30.3	1131.2	22.6	-0.03
0.076	1.328	2.030	2.692	0.193	2.342	0.852	1107.7	26.5	1135.5	48.6	1125.7	36.0	-0.03
0.093	1.026	3.416	1.946	0.266	1.654	0.799	1490.1	19.4	1521.3	44.7	1508.0	30.1	-0.02
0.078	1.055	2.111	1.816	0.197	1.479	0.730	1137.2	21.0	1161.0	31.3	1152.5	24.7	-0.02
0.078	1.192	2.129	2.065	0.198	1.687	0.760	1143.3	23.7	1166.6	35.9	1158.2	28.1	-0.02
0.200	1.031	15.606	1.770	0.565	1.438	0.720	2829.9	16.8	2886.8	66.6	2853.0	33.2	-0.02
0.080	1.133	2.319	2.022	0.210	1.675	0.773	1203.1	22.3	1227.2	37.3	1218.2	28.3	-0.02
0.094	1.100	3.482	2.184	0.269	1.887	0.832	1506.6	20.8	1535.8	51.4	1523.2	33.9	-0.02
0.109	0.863	4.861	1.616	0.325	1.367	0.751	1777.7	15.7	1811.7	43.0	1795.5	26.9	-0.02
0.078	1.166	2.099	1.949	0.196	1.562	0.726	1135.3	23.2	1155.7	33.0	1148.3	26.5	-0.02
0.092	1.079	3.324	1.901	0.261	1.565	0.755	1472.9	20.5	1497.0	41.7	1486.7	29.2	-0.02
0.107	0.904	4.670	1.793	0.317	1.548	0.808	1748.0	16.6	1774.2	47.8	1761.8	29.6	-0.02
0.093	1.026	3.394	1.946	0.264	1.654	0.799	1490.3	19.4	1512.7	44.4	1503.0	30.1	-0.02
0.077	1.142	2.075	2.187	0.195	1.865	0.817	1130.4	22.7	1146.7	39.1	1140.7	29.5	-0.01
0.093	1.076	3.405	1.915	0.265	1.584	0.763	1494.0	20.4	1514.4	42.6	1505.5	29.6	-0.01
0.095	0.999	3.541	1.867	0.271	1.577	0.785	1524.8	18.8	1545.4	43.2	1536.3	29.1	-0.01

0.115	0.999	5.471	1.843	0.344	1.549	0.776	1885.6	18.0	1906.2	50.9	1896.0	31.2	-0.01
0.077	1.028	2.029	1.802	0.191	1.480	0.739	1118.6	20.5	1129.2	30.6	1125.3	24.2	-0.01
0.080	1.138	2.304	2.028	0.208	1.678	0.773	1207.3	22.4	1217.7	37.1	1213.7	28.3	-0.01
0.095	0.789	3.522	1.740	0.269	1.551	0.848	1527.7	14.9	1536.2	42.3	1532.3	27.2	-0.01
0.086	1.045	2.737	1.938	0.231	1.632	0.787	1338.2	20.2	1339.3	39.4	1338.5	28.4	0.00
0.078	1.760	2.094	2.954	0.195	2.372	0.778	1147.2	35.0	1146.9	49.7	1146.7	39.8	0.00
0.086	1.212	2.744	2.101	0.231	1.717	0.763	1341.4	23.4	1340.3	41.4	1340.4	30.8	0.00
0.085	1.173	2.631	1.917	0.225	1.516	0.706	1311.3	22.8	1308.7	35.8	1309.4	27.8	0.00
0.103	0.981	4.188	1.741	0.296	1.438	0.738	1674.2	18.1	1670.4	42.2	1671.7	28.1	0.00
0.078	1.478	2.082	2.486	0.194	1.999	0.766	1145.4	29.4	1141.8	41.7	1142.8	33.5	0.00
0.078	1.504	2.104	2.276	0.195	1.707	0.683	1154.7	29.9	1148.2	35.8	1150.1	30.9	0.01
0.134	0.973	7.285	1.791	0.394	1.504	0.769	2154.6	17.0	2139.8	54.5	2147.0	31.5	0.01
0.098	1.095	3.759	2.045	0.278	1.727	0.799	1590.6	20.5	1579.6	48.2	1584.0	32.3	0.01
0.102	0.995	4.119	2.050	0.292	1.793	0.841	1665.4	18.4	1652.8	52.1	1658.0	33.0	0.01
0.095	1.006	3.445	1.848	0.264	1.551	0.774	1521.9	19.0	1510.2	41.6	1514.7	28.7	0.01
0.081	1.024	2.319	1.809	0.207	1.492	0.746	1225.0	20.1	1214.9	33.0	1218.2	25.4	0.01
0.082	1.325	2.379	2.020	0.211	1.525	0.664	1243.5	26.0	1232.5	34.1	1236.2	28.5	0.01
0.104	0.858	4.251	1.777	0.297	1.557	0.826	1692.7	15.8	1677.6	45.8	1684.0	28.8	0.01
0.080	1.300	2.222	2.003	0.202	1.524	0.670	1195.6	25.6	1184.3	32.9	1188.0	27.7	0.01
0.087	0.821	2.783	1.850	0.232	1.658	0.863	1360.0	15.8	1345.9	40.1	1351.1	27.3	0.01
0.100	0.973	3.881	1.952	0.282	1.692	0.825	1620.1	18.1	1602.4	47.8	1609.7	31.0	0.01
0.078	1.504	2.091	2.276	0.194	1.707	0.683	1154.9	29.9	1141.5	35.6	1145.8	30.8	0.01
0.094	0.967	3.397	1.937	0.261	1.679	0.824	1515.4	18.2	1495.9	44.7	1503.6	29.9	0.01
0.135	0.888	7.279	1.737	0.392	1.493	0.795	2160.6	15.5	2132.1	54.0	2146.2	30.5	0.01
0.095	1.006	3.423	1.848	0.262	1.551	0.774	1522.0	19.0	1501.6	41.4	1509.7	28.6	0.01
0.112	0.830	5.036	1.700	0.325	1.484	0.813	1839.5	15.0	1813.7	46.8	1825.3	28.4	0.01
0.078	1.616	2.071	2.579	0.192	2.010	0.738	1150.5	32.1	1133.7	41.7	1139.2	34.7	0.01
0.078	1.595	2.057	2.245	0.191	1.580	0.614	1146.0	31.7	1129.0	32.6	1134.5	30.2	0.01
0.087	1.211	2.773	2.154	0.231	1.781	0.780	1361.1	23.3	1340.7	43.0	1348.3	31.6	0.01
0.131	0.955	6.896	1.742	0.381	1.457	0.756	2114.2	16.7	2082.5	51.7	2098.1	30.4	0.01
0.090	1.141	3.055	1.926	0.245	1.552	0.731	1434.9	21.8	1413.2	39.3	1421.5	29.1	0.02
0.080	1.300	2.208	2.003	0.200	1.524	0.670	1196.1	25.6	1177.3	32.7	1183.6	27.6	0.02

0.103	1.095	4.125	2.067	0.291	1.753	0.805	1674.7	20.2	1647.7	50.8	1659.3	33.2	0.02
0.107	1.052	4.529	2.023	0.307	1.728	0.811	1752.5	19.3	1723.7	52.0	1736.4	33.1	0.02
0.117	0.686	5.447	1.602	0.338	1.448	0.857	1910.0	12.3	1876.8	47.0	1892.2	27.1	0.02
0.077	1.214	1.979	1.850	0.186	1.396	0.635	1121.8	24.2	1102.2	28.2	1108.5	24.7	0.02
0.109	1.117	4.682	1.843	0.312	1.466	0.703	1781.3	20.4	1750.1	44.8	1764.0	30.4	0.02
0.097	1.007	3.576	1.945	0.268	1.664	0.808	1560.5	18.9	1532.8	45.2	1544.1	30.4	0.02
0.090	0.971	3.015	1.983	0.243	1.729	0.834	1428.1	18.5	1401.2	43.4	1411.5	29.8	0.02
0.078	1.291	2.064	2.287	0.192	1.888	0.785	1151.6	25.6	1129.8	39.0	1137.0	30.8	0.02
0.122	0.770	5.892	1.794	0.351	1.620	0.870	1982.1	13.7	1940.0	54.0	1960.1	30.7	0.02
0.079	1.323	2.139	2.138	0.196	1.680	0.721	1178.5	26.2	1152.9	35.4	1161.5	29.2	0.02
0.095	0.910	3.374	1.714	0.259	1.453	0.771	1519.5	17.2	1484.2	38.4	1498.5	26.5	0.02
0.109	0.936	4.679	1.900	0.311	1.653	0.826	1787.3	17.1	1744.2	50.3	1763.5	31.3	0.02
0.078	1.123	2.043	2.023	0.190	1.683	0.779	1150.3	22.3	1120.1	34.5	1130.1	27.2	0.03
0.085	0.940	2.551	1.815	0.219	1.553	0.797	1308.4	18.2	1274.1	35.8	1286.6	26.1	0.03
0.122	0.770	5.855	1.794	0.349	1.620	0.870	1982.3	13.7	1929.4	53.8	1954.6	30.6	0.03
0.094	1.163	3.339	2.068	0.257	1.710	0.775	1514.6	22.0	1473.8	44.9	1490.2	31.8	0.03
0.088	0.918	2.795	1.693	0.231	1.422	0.755	1377.4	17.6	1340.1	34.3	1354.2	25.0	0.03
0.103	1.156	4.049	2.024	0.287	1.662	0.763	1670.1	21.4	1624.6	47.5	1644.2	32.4	0.03
0.078	1.886	2.030	2.819	0.189	2.095	0.702	1146.8	37.5	1115.1	42.8	1125.6	37.6	0.03
0.082	1.214	2.321	1.883	0.206	1.439	0.658	1241.5	23.8	1206.3	31.6	1218.7	26.4	0.03
0.108	0.780	4.530	1.715	0.305	1.527	0.845	1764.3	14.3	1714.2	45.8	1736.5	28.1	0.03
0.109	0.937	4.649	1.900	0.309	1.653	0.826	1787.4	17.1	1734.4	50.1	1758.2	31.3	0.03
0.081	0.803	2.269	1.642	0.203	1.433	0.805	1226.3	15.8	1189.9	31.1	1202.6	22.9	0.03
0.088	1.180	2.773	1.868	0.230	1.447	0.673	1374.0	22.7	1332.7	34.8	1348.3	27.5	0.03
0.085	0.940	2.534	1.815	0.217	1.553	0.797	1308.6	18.2	1266.7	35.6	1282.0	26.1	0.03
0.095	0.859	3.370	1.764	0.258	1.541	0.821	1526.7	16.2	1477.6	40.6	1497.6	27.3	0.03
0.097	0.916	3.509	1.820	0.263	1.572	0.811	1560.3	17.2	1507.5	42.1	1529.2	28.4	0.03
0.082	1.053	2.306	1.891	0.204	1.571	0.766	1242.0	20.6	1198.9	34.3	1214.1	26.4	0.03
0.112	1.244	4.865	2.445	0.315	2.105	0.836	1832.1	22.5	1766.0	64.7	1796.1	40.4	0.04
0.079	1.284	2.054	2.090	0.190	1.649	0.722	1162.2	25.5	1119.2	33.8	1133.6	28.1	0.04
0.102	1.287	3.999	2.248	0.283	1.843	0.776	1669.6	23.8	1607.3	52.2	1634.1	35.9	0.04
0.079	0.989	2.092	1.970	0.192	1.704	0.823	1175.8	19.6	1130.9	35.2	1146.0	26.7	0.04

0.103	0.765	4.059	1.813	0.285	1.644	0.877	1684.8	14.1	1616.7	46.8	1646.1	29.1	0.04
0.084	1.188	2.469	2.197	0.213	1.849	0.802	1297.8	23.1	1243.1	41.7	1262.9	31.3	0.04
0.097	1.008	3.524	1.810	0.263	1.503	0.756	1573.1	18.9	1504.2	40.2	1532.7	28.2	0.04
0.083	0.916	2.374	1.960	0.207	1.733	0.851	1272.1	17.9	1214.2	38.2	1234.9	27.6	0.05
0.117	1.054	5.262	2.019	0.326	1.723	0.809	1912.1	18.9	1819.6	54.4	1862.7	33.9	0.05
0.079	1.476	2.048	2.291	0.188	1.752	0.704	1171.4	29.2	1111.6	35.7	1131.7	30.8	0.05
0.112	0.884	4.787	1.920	0.309	1.705	0.854	1836.2	16.0	1737.8	51.7	1782.6	31.8	0.05
0.080	1.096	2.113	2.031	0.192	1.709	0.794	1196.0	21.6	1130.8	35.4	1153.1	27.6	0.05
0.082	1.178	2.258	2.025	0.200	1.647	0.752	1244.9	23.1	1174.6	35.3	1199.3	28.1	0.06
0.080	1.156	2.136	2.089	0.193	1.740	0.785	1206.2	22.8	1136.4	36.2	1160.4	28.5	0.06
0.096	1.216	3.387	2.181	0.255	1.810	0.786	1555.0	22.8	1464.4	47.3	1501.4	33.6	0.06
0.079	1.714	2.051	2.764	0.188	2.168	0.751	1178.2	33.9	1109.5	44.1	1132.7	37.0	0.06
0.116	0.821	5.053	1.600	0.317	1.374	0.772	1888.0	14.8	1776.9	42.5	1828.3	26.8	0.06
0.115	1.035	5.016	1.814	0.316	1.489	0.741	1881.9	18.6	1770.9	46.0	1822.1	30.3	0.06
0.079	1.261	2.063	2.110	0.188	1.692	0.742	1183.8	24.9	1112.7	34.5	1136.7	28.5	0.06
0.082	1.208	2.245	2.068	0.199	1.678	0.753	1246.7	23.7	1167.6	35.7	1195.4	28.6	0.06
0.080	1.917	2.090	2.834	0.189	2.087	0.694	1199.4	37.8	1118.0	42.7	1145.7	38.2	0.07
0.087	1.065	2.604	2.180	0.217	1.902	0.843	1360.5	20.5	1267.0	43.6	1301.8	31.5	0.07
0.095	1.016	3.264	1.945	0.248	1.659	0.804	1537.8	19.1	1428.2	42.4	1472.5	29.8	0.07
0.125	1.151	5.802	1.940	0.338	1.562	0.731	2021.9	20.4	1877.4	50.7	1946.7	33.1	0.07
0.081	2.409	2.114	3.305	0.190	2.263	0.647	1210.3	47.4	1123.6	46.5	1153.2	44.6	0.07
0.088	0.829	2.624	1.721	0.217	1.508	0.821	1372.6	16.0	1268.6	34.6	1307.4	25.0	0.08
0.129	0.747	6.206	1.892	0.348	1.739	0.898	2088.4	13.1	1926.5	57.6	2005.4	32.6	0.08
0.087	0.935	2.590	1.816	0.216	1.557	0.800	1364.6	18.0	1258.3	35.5	1297.8	26.3	0.08
0.080	1.607	2.047	2.690	0.186	2.158	0.770	1194.1	31.7	1099.4	43.5	1131.4	36.1	0.08
0.080	2.164	2.017	3.029	0.184	2.119	0.656	1184.8	42.8	1089.3	42.3	1121.3	40.3	0.08
0.099	1.212	3.479	1.948	0.256	1.525	0.698	1598.2	22.6	1469.0	39.9	1522.4	30.3	0.08
0.080	1.193	2.082	2.038	0.188	1.653	0.749	1207.7	23.5	1109.7	33.6	1143.0	27.6	0.08
0.081	1.184	2.091	1.991	0.188	1.601	0.735	1213.6	23.3	1110.9	32.6	1145.9	27.0	0.08
0.096	0.946	3.196	1.829	0.243	1.565	0.799	1540.3	17.8	1399.8	39.3	1456.2	27.9	0.09
0.116	1.058	4.903	2.408	0.306	2.163	0.883	1901.1	19.0	1719.7	65.0	1802.8	39.8	0.10
0.117	1.041	4.949	2.074	0.306	1.793	0.829	1916.1	18.7	1721.3	54.0	1810.7	34.4	0.10

0.097	1.158	3.275	1.938	0.244	1.554	0.726	1576.6	21.7	1406.2	39.1	1475.1	29.7	0.11
0.087	1.288	2.440	2.291	0.204	1.895	0.788	1355.5	24.8	1196.8	41.3	1254.4	32.5	0.12
0.094	1.069	2.981	1.956	0.229	1.638	0.782	1513.3	20.2	1331.7	39.3	1402.7	29.3	0.12
0.083	0.842	2.119	1.926	0.186	1.732	0.871	1266.4	16.4	1097.2	34.9	1155.2	26.2	0.13
0.086	1.295	2.313	2.265	0.195	1.857	0.777	1334.8	25.1	1151.0	39.0	1216.2	31.6	0.14
0.103	1.202	3.533	1.895	0.250	1.465	0.674	1670.0	22.2	1438.7	37.7	1534.5	29.6	0.14
0.096	2.915	2.990	3.493	0.226	1.926	0.493	1546.8	54.8	1314.1	45.6	1405.1	51.8	0.15
0.086	1.525	2.289	2.346	0.193	1.783	0.701	1339.5	29.5	1137.6	37.1	1208.9	32.6	0.15
0.103	1.130	3.524	1.847	0.248	1.461	0.696	1681.4	20.9	1427.6	37.3	1532.5	28.8	0.15
0.084	1.159	2.171	2.232	0.186	1.908	0.822	1303.4	22.5	1102.4	38.5	1171.8	30.6	0.15
0.105	1.036	3.538	1.886	0.244	1.576	0.773	1715.2	19.0	1409.2	39.8	1535.7	29.4	0.18
0.089	1.440	2.341	2.505	0.191	2.050	0.784	1398.6	27.6	1128.9	42.3	1224.8	35.0	0.19
0.099	0.902	2.992	1.838	0.218	1.601	0.824	1614.1	16.8	1272.8	36.9	1405.6	27.6	0.21
0.096	0.929	2.769	1.724	0.209	1.453	0.764	1551.4	17.4	1223.0	32.3	1347.3	25.4	0.21
0.107	1.150	3.511	2.007	0.238	1.645	0.759	1748.3	21.1	1377.1	40.7	1529.7	31.2	0.21
0.128	1.061	5.046	2.008	0.286	1.705	0.803	2073.0	18.7	1619.7	48.6	1827.0	33.5	0.22
0.111	0.950	3.395	1.858	0.222	1.597	0.807	1813.8	17.3	1293.5	37.3	1503.3	28.7	0.29
0.104	1.240	2.587	2.082	0.181	1.673	0.742	1695.0	22.9	1070.5	32.9	1296.9	30.1	0.37
0.109	1.298	2.533	2.143	0.169	1.705	0.736	1776.4	23.7	1007.9	31.7	1281.7	30.7	0.43
0.114	1.017	2.753	1.827	0.175	1.518	0.759	1867.8	18.3	1038.9	29.1	1342.9	26.9	0.44
0.119	0.911	2.559	1.857	0.156	1.618	0.825	1937.2	16.3	936.5	28.1	1288.9	26.8	0.52
0.238	2.420	8.485	2.833	0.258	1.473	0.410	3108.7	38.6	1481.3	38.9	2284.3	50.2	0.52
0.122	1.524	2.481	3.283	0.148	2.908	0.877	1982.7	27.1	888.6	48.1	1266.5	46.4	0.55
0.076	0.920	2.107	1.587	0.201	1.294	0.682	1096.2	18.4	1180.8	27.9	1151.0	21.6	-0.08
0.078	0.651	2.170	1.640	0.201	1.505	0.885	1151.4	12.9	1182.6	32.4	1171.3	22.5	-0.03
0.078	0.831	2.148	1.762	0.200	1.553	0.834	1146.8	16.5	1174.2	33.3	1164.3	24.1	-0.02
0.078	0.861	2.133	1.606	0.199	1.356	0.746	1142.4	17.1	1169.3	28.9	1159.6	22.0	-0.02
0.078	0.799	2.163	1.554	0.200	1.332	0.760	1154.5	15.9	1177.5	28.6	1169.1	21.3	-0.02
0.078	1.027	2.089	1.899	0.195	1.597	0.783	1137.1	20.4	1149.9	33.6	1145.2	25.7	-0.01
0.079	0.787	2.199	1.744	0.202	1.556	0.850	1174.4	15.6	1184.6	33.6	1180.7	24.1	-0.01
0.078	0.775	2.106	1.704	0.196	1.517	0.844	1146.0	15.4	1153.8	32.0	1150.8	23.2	-0.01

0.078	1.265	2.135	1.890	0.198	1.404	0.623	1155.5	25.1	1163.3	29.8	1160.2	25.8	-0.01
0.079	0.871	2.156	1.746	0.199	1.514	0.808	1163.2	17.3	1169.3	32.3	1166.9	23.9	-0.01
0.077	1.032	2.036	1.873	0.191	1.563	0.770	1127.0	20.6	1128.3	32.3	1127.6	25.2	0.00
0.104	1.071	4.268	1.891	0.298	1.559	0.756	1692.8	19.7	1683.4	46.0	1687.2	30.6	0.01
0.078	0.908	2.043	1.785	0.191	1.536	0.802	1134.9	18.1	1128.1	31.7	1130.1	24.0	0.01
0.078	1.082	2.046	1.773	0.191	1.404	0.685	1136.1	21.5	1128.6	29.0	1130.9	23.9	0.01
0.079	0.793	2.116	1.645	0.196	1.441	0.812	1159.9	15.7	1151.2	30.3	1153.9	22.4	0.01
0.078	1.094	2.108	2.319	0.195	2.044	0.860	1157.5	21.7	1148.5	42.9	1151.3	31.4	0.01
0.078	0.749	2.111	1.734	0.195	1.564	0.865	1158.8	14.9	1149.5	32.8	1152.4	23.6	0.01
0.078	0.907	2.054	1.923	0.192	1.696	0.845	1140.6	18.0	1130.3	35.1	1133.5	25.9	0.01
0.078	1.146	2.102	1.938	0.195	1.563	0.733	1156.5	22.7	1146.1	32.7	1149.4	26.3	0.01
0.078	0.737	2.094	1.664	0.194	1.492	0.850	1154.2	14.6	1143.5	31.2	1146.9	22.6	0.01
0.078	1.032	2.110	1.917	0.195	1.615	0.787	1159.5	20.5	1148.6	33.9	1152.1	26.1	0.01
0.078	1.200	2.091	1.940	0.194	1.525	0.701	1153.6	23.8	1142.1	31.8	1145.8	26.3	0.01
0.079	1.201	2.118	1.852	0.195	1.410	0.647	1163.7	23.8	1150.4	29.6	1154.7	25.2	0.01
0.079	1.285	2.161	2.050	0.198	1.598	0.704	1177.6	25.4	1164.1	33.9	1168.5	28.1	0.01
0.078	1.008	2.052	1.799	0.191	1.490	0.751	1142.1	20.0	1128.8	30.8	1133.1	24.3	0.01
0.078	1.158	2.051	1.979	0.191	1.605	0.744	1143.3	23.0	1127.4	33.1	1132.5	26.7	0.01
0.094	0.866	3.351	1.530	0.259	1.261	0.682	1506.2	16.4	1484.4	33.4	1493.0	23.7	0.01
0.078	0.842	2.058	1.531	0.191	1.278	0.706	1146.5	16.7	1129.5	26.4	1135.0	20.7	0.01
0.080	0.804	2.187	1.650	0.199	1.441	0.808	1188.8	15.9	1170.8	30.8	1176.8	22.7	0.02
0.079	0.769	2.110	1.536	0.194	1.330	0.772	1165.2	15.2	1145.7	27.9	1152.1	20.9	0.02
0.078	1.245	2.068	2.131	0.192	1.730	0.758	1151.7	24.7	1131.8	35.8	1138.3	28.8	0.02
0.078	0.819	2.076	1.713	0.192	1.505	0.824	1154.8	16.2	1134.1	31.2	1141.0	23.2	0.02
0.079	0.810	2.114	1.663	0.195	1.453	0.810	1167.6	16.0	1146.4	30.4	1153.4	22.7	0.02
0.078	1.135	2.070	2.235	0.192	1.926	0.831	1156.8	22.5	1130.1	39.8	1138.9	30.2	0.02
0.078	1.006	2.046	1.705	0.190	1.376	0.698	1149.0	20.0	1122.2	28.3	1131.1	23.0	0.02
0.079	1.006	2.137	1.978	0.196	1.703	0.818	1179.5	19.9	1151.2	35.8	1160.7	27.0	0.02
0.087	1.289	2.768	2.528	0.230	2.175	0.837	1367.7	24.8	1334.3	52.2	1346.9	37.0	0.02
0.096	0.796	3.459	1.610	0.262	1.399	0.794	1540.5	15.0	1502.5	37.4	1518.0	25.1	0.02
0.078	0.896	2.005	1.610	0.187	1.338	0.720	1137.4	17.8	1107.4	27.2	1117.3	21.6	0.03
0.079	0.742	2.093	1.639	0.193	1.462	0.839	1167.1	14.7	1136.1	30.4	1146.5	22.3	0.03

0.080	0.965	2.206	1.798	0.199	1.517	0.776	1204.1	19.0	1171.8	32.4	1182.9	24.8	0.03
0.078	1.095	2.003	1.888	0.187	1.538	0.740	1137.3	21.8	1106.4	31.2	1116.6	25.3	0.03
0.078	1.183	2.002	2.103	0.187	1.739	0.777	1137.2	23.5	1106.1	35.2	1116.3	28.1	0.03
0.078	0.952	2.022	1.811	0.188	1.541	0.789	1145.0	18.9	1112.0	31.4	1122.9	24.3	0.03
0.079	0.835	2.093	1.642	0.193	1.413	0.784	1169.1	16.5	1134.9	29.3	1146.4	22.3	0.03
0.078	0.853	2.032	1.667	0.189	1.432	0.785	1149.1	16.9	1114.9	29.3	1126.3	22.4	0.03
0.078	0.963	2.050	1.752	0.190	1.464	0.757	1156.1	19.1	1120.3	30.0	1132.2	23.6	0.03
0.079	0.975	2.093	1.940	0.192	1.677	0.821	1172.0	19.3	1133.5	34.8	1146.5	26.3	0.03
0.078	0.811	2.044	1.762	0.189	1.565	0.844	1157.0	16.1	1117.0	32.0	1130.3	23.8	0.03
0.079	0.810	2.075	1.603	0.191	1.383	0.781	1168.0	16.0	1126.9	28.5	1140.7	21.7	0.04
0.078	1.153	2.041	1.840	0.189	1.433	0.675	1157.4	22.9	1115.2	29.3	1129.3	24.8	0.04
0.089	0.904	2.901	1.764	0.235	1.514	0.797	1414.3	17.3	1361.8	37.1	1382.0	26.3	0.04
0.078	1.187	2.038	1.999	0.189	1.608	0.737	1157.5	23.5	1113.8	32.8	1128.4	26.9	0.04
0.078	1.054	2.003	1.889	0.186	1.568	0.764	1145.6	20.9	1102.0	31.7	1116.4	25.3	0.04
0.079	0.611	2.110	1.637	0.193	1.519	0.902	1183.5	12.1	1135.9	31.6	1152.1	22.3	0.04
0.078	1.202	1.991	2.260	0.185	1.914	0.812	1144.6	23.9	1096.4	38.5	1112.4	30.1	0.04
0.080	1.156	2.119	1.955	0.193	1.576	0.735	1188.4	22.8	1137.9	32.8	1155.1	26.6	0.04
0.078	0.862	1.974	1.657	0.184	1.415	0.774	1139.4	17.1	1090.5	28.3	1106.7	22.1	0.04
0.079	1.104	2.073	2.009	0.190	1.679	0.783	1173.3	21.8	1122.7	34.5	1139.8	27.2	0.04
0.079	1.172	2.041	2.077	0.188	1.714	0.773	1163.2	23.2	1112.3	34.9	1129.4	27.9	0.04
0.079	0.915	2.051	2.005	0.189	1.784	0.861	1166.7	18.1	1115.4	36.4	1132.6	27.0	0.04
0.079	1.026	2.065	1.942	0.190	1.649	0.798	1171.7	20.3	1120.0	33.8	1137.4	26.2	0.04
0.080	1.018	2.115	1.780	0.193	1.460	0.734	1188.7	20.1	1135.6	30.3	1153.7	24.3	0.04
0.078	0.924	2.010	1.740	0.186	1.474	0.775	1154.0	18.3	1101.4	29.8	1118.9	23.3	0.05
0.080	1.025	2.161	1.840	0.195	1.528	0.760	1209.0	20.2	1147.6	32.0	1168.7	25.2	0.05
0.078	1.355	2.005	2.300	0.186	1.859	0.763	1156.7	26.9	1097.4	37.4	1117.2	30.7	0.05
0.080	0.684	2.091	1.603	0.191	1.449	0.858	1186.2	13.5	1125.0	29.9	1145.8	21.8	0.05
0.079	0.960	2.066	1.816	0.189	1.542	0.786	1179.1	19.0	1116.7	31.5	1137.8	24.6	0.05
0.079	0.911	2.025	1.739	0.187	1.481	0.782	1166.3	18.0	1102.6	29.9	1123.9	23.4	0.05
0.079	0.989	2.006	1.801	0.185	1.505	0.763	1160.2	19.6	1096.2	30.3	1117.6	24.1	0.06
0.088	1.039	2.692	1.778	0.223	1.444	0.720	1374.7	20.0	1297.2	33.8	1326.4	26.0	0.06
0.080	0.882	2.142	1.925	0.193	1.710	0.856	1207.3	17.4	1138.8	35.6	1162.4	26.3	0.06

0.079	0.809	2.057	1.698	0.188	1.494	0.824	1182.7	16.0	1110.1	30.4	1134.6	22.9		0.06
0.079	1.128	2.038	1.921	0.187	1.555	0.736	1176.5	22.3	1103.9	31.5	1128.3	25.8		0.06
0.079	1.216	1.990	1.938	0.184	1.509	0.689	1160.2	24.1	1088.4	30.1	1112.3	25.9		0.06
0.079	1.042	1.992	1.980	0.184	1.684	0.803	1161.2	20.7	1088.9	33.7	1112.9	26.4		0.06
0.080	1.104	2.109	1.985	0.191	1.650	0.775	1202.6	21.8	1125.2	34.0	1151.6	27.0		0.06
0.080	0.924	2.125	1.873	0.192	1.629	0.824	1208.2	18.2	1130.2	33.7	1156.9	25.5		0.06
0.081	1.024	2.130	1.809	0.192	1.491	0.745	1210.1	20.2	1131.8	30.9	1158.6	24.7		0.06
0.079	1.233	2.002	2.006	0.184	1.582	0.713	1166.7	24.4	1090.7	31.7	1116.1	26.8		0.07
0.079	1.263	1.995	2.158	0.184	1.750	0.758	1167.3	25.0	1087.1	34.9	1113.8	28.8		0.07
0.080	1.007	2.059	1.844	0.187	1.544	0.771	1190.7	19.9	1107.2	31.3	1135.4	24.9		0.07
0.080	1.029	2.098	1.942	0.189	1.647	0.797	1205.8	20.3	1118.2	33.7	1148.1	26.4		0.07
0.079	1.128	1.980	1.803	0.182	1.407	0.670	1165.9	22.3	1080.0	27.9	1108.6	24.0		0.07
0.081	0.859	2.169	1.675	0.193	1.437	0.784	1231.2	16.9	1139.3	29.9	1171.1	23.0		0.07
0.078	0.821	1.948	1.650	0.180	1.431	0.797	1157.0	16.3	1068.7	28.1	1097.8	21.9		0.08
0.081	0.711	2.118	1.568	0.190	1.398	0.829	1216.2	14.0	1122.6	28.7	1154.7	21.4		0.08
0.079	0.870	1.988	1.751	0.183	1.520	0.810	1172.0	17.2	1081.0	30.2	1111.3	23.4		0.08
0.079	0.971	1.953	1.724	0.180	1.425	0.736	1163.1	19.2	1067.9	28.0	1099.4	22.9		0.08
0.080	1.133	2.028	1.943	0.184	1.578	0.743	1192.5	22.4	1090.5	31.6	1124.8	26.1		0.09
0.097	1.016	3.311	1.753	0.248	1.429	0.721	1563.9	19.0	1428.9	36.5	1483.7	27.0		0.09
0.079	1.062	1.973	1.842	0.181	1.505	0.738	1174.6	21.0	1072.3	29.7	1106.2	24.5		0.09
0.079	0.997	1.969	1.819	0.181	1.521	0.766	1175.7	19.7	1069.9	29.9	1105.0	24.2		0.09
0.082	0.986	2.141	1.985	0.190	1.723	0.828	1235.4	19.3	1123.9	35.4	1162.3	27.1		0.09
0.079	0.960	1.935	1.987	0.178	1.740	0.840	1164.2	19.0	1058.6	33.9	1093.4	26.3		0.09
0.080	0.864	2.006	1.769	0.183	1.544	0.820	1189.7	17.1	1081.2	30.7	1117.5	23.7		0.09
0.080	0.763	2.025	1.572	0.183	1.374	0.797	1201.6	15.0	1084.7	27.4	1124.0	21.1		0.10
0.081	0.758	2.064	1.636	0.185	1.450	0.829	1216.5	14.9	1096.1	29.2	1136.9	22.1		0.10
0.079	0.680	1.964	1.557	0.179	1.400	0.844	1184.5	13.4	1062.9	27.4	1103.2	20.7		0.10
0.080	0.897	1.959	1.650	0.179	1.385	0.746	1185.2	17.7	1060.2	27.0	1101.6	21.9		0.11
0.080	0.876	1.969	1.692	0.179	1.448	0.782	1189.9	17.3	1062.6	28.3	1104.9	22.5		0.11
0.078	0.652	1.858	1.709	0.173	1.580	0.900	1150.6	12.9	1025.9	29.9	1066.2	22.3		0.11
0.081	0.793	2.028	1.530	0.182	1.308	0.749	1215.1	15.6	1079.3	26.0	1125.0	20.6		0.11
0.080	0.830	1.990	1.640	0.180	1.415	0.787	1201.9	16.4	1067.2	27.8	1112.1	21.9		0.11

0.080	0.745	2.000	1.516	0.181	1.320	0.778	1206.4	14.7	1070.1	26.0	1115.7	20.3	0.11
0.085	1.554	2.317	2.249	0.198	1.625	0.641	1315.7	30.1	1163.4	34.5	1217.5	31.4	0.12
0.081	0.933	1.994	1.715	0.180	1.440	0.757	1210.1	18.4	1065.1	28.2	1113.5	22.9	0.12
0.081	1.032	1.977	1.847	0.178	1.532	0.759	1214.1	20.3	1054.6	29.7	1107.6	24.6	0.13
0.082	0.893	2.077	1.725	0.183	1.476	0.787	1251.1	17.5	1084.6	29.4	1141.1	23.4	0.13
0.079	0.917	1.881	2.082	0.172	1.869	0.875	1182.7	18.1	1022.5	35.2	1074.6	27.2	0.14
0.088	2.184	2.430	2.702	0.201	1.591	0.495	1378.8	42.0	1179.5	34.2	1251.6	38.1	0.14
0.087	1.813	2.327	2.269	0.193	1.365	0.459	1371.5	34.9	1137.4	28.4	1220.5	31.7	0.17
0.083	0.790	1.995	1.778	0.175	1.592	0.858	1258.5	15.5	1041.7	30.6	1113.9	23.8	0.17
0.080	0.660	1.800	1.702	0.164	1.568	0.895	1185.8	13.0	980.1	28.5	1045.5	22.0	0.17
0.073	0.871	1.392	1.923	0.138	1.714	0.859	1013.3	17.7	835.5	26.8	885.4	22.5	0.18
0.084	1.183	2.102	1.907	0.181	1.495	0.694	1303.3	23.0	1070.1	29.4	1149.4	25.9	0.18
0.080	0.844	1.746	2.086	0.159	1.908	0.897	1186.2	16.7	952.5	33.7	1025.7	26.6	0.20
0.088	0.982	2.282	1.821	0.187	1.534	0.776	1391.8	18.8	1106.4	31.1	1206.7	25.4	0.21
0.080	0.840	1.749	2.129	0.159	1.956	0.904	1196.3	16.6	949.4	34.5	1026.8	27.1	0.21
0.084	1.301	1.965	2.125	0.170	1.680	0.727	1290.9	25.3	1011.5	31.4	1103.6	28.2	0.22
0.075	1.070	1.392	1.921	0.135	1.595	0.768	1070.5	21.5	813.5	24.3	885.4	22.4	0.24
0.081	0.902	1.730	1.763	0.155	1.515	0.798	1222.3	17.7	928.2	26.1	1019.6	22.4	0.24
0.077	0.816	1.502	1.474	0.141	1.227	0.678	1129.7	16.3	850.1	19.5	931.3	17.8	0.25
0.076	0.774	1.412	1.714	0.135	1.529	0.847	1097.9	15.5	813.9	23.3	893.8	20.2	0.26
0.075	1.364	1.290	2.324	0.126	1.881	0.766	1055.3	27.5	762.7	27.0	841.2	26.2	0.28
0.099	4.596	2.635	4.918	0.193	1.750	0.298	1607.5	85.7	1137.3	36.4	1310.6	69.9	0.29
0.085	1.230	1.683	2.073	0.143	1.668	0.744	1319.3	23.8	863.9	26.9	1002.2	26.1	0.35
0.090	1.058	1.762	1.950	0.141	1.638	0.785	1433.7	20.2	853.0	26.1	1031.7	25.0	0.41
0.073	0.959	0.989	1.833	0.098	1.562	0.793	1026.8	19.4	600.6	17.9	698.0	18.3	0.42
0.074	0.882	0.979	2.170	0.096	1.982	0.898	1040.4	17.8	591.3	22.4	693.2	21.6	0.43
0.171	6.247	5.625	6.610	0.239	2.160	0.293	2565.8	104.5	1381.0	53.5	1919.9	108.0	0.46
0.074	0.738	0.915	1.769	0.090	1.608	0.878	1040.8	14.9	553.8	17.0	659.5	17.0	0.47
0.084	0.683	1.013	1.771	0.087	1.634	0.900	1299.7	13.3	538.9	16.9	710.4	17.9	0.59
0.103	0.923	1.326	1.917	0.093	1.680	0.837	1678.8	17.0	575.8	18.5	857.2	22.0	0.66
0.077	1.045	2.144	1.992	0.203	1.696	0.805	1111.0	20.9	1192.0	36.8	1163.3	27.2	-0.07

0.092	0.987	3.491	1.794	0.275	1.498	0.761	1471.0	18.7	1565.2	41.5	1525.2	27.9	-0.06
0.092	1.069	3.458	2.006	0.272	1.698	0.799	1473.5	20.3	1550.4	46.6	1517.8	31.1	-0.05
0.104	0.838	4.560	1.740	0.318	1.525	0.823	1698.4	15.4	1779.2	47.2	1742.0	28.6	-0.05
0.111	0.940	5.197	1.750	0.341	1.476	0.769	1810.8	17.1	1889.8	48.2	1852.1	29.4	-0.04
0.101	1.069	4.222	1.947	0.304	1.627	0.778	1641.2	19.8	1708.9	48.7	1678.4	31.5	-0.04
0.100	0.895	4.103	1.768	0.299	1.525	0.803	1618.9	16.7	1684.2	45.0	1655.0	28.5	-0.04
0.092	0.769	3.369	1.621	0.266	1.427	0.816	1464.3	14.6	1521.3	38.6	1497.3	25.1	-0.04
0.100	1.075	4.090	1.936	0.297	1.610	0.772	1620.3	20.0	1678.4	47.4	1652.4	31.1	-0.04
0.093	0.926	3.457	1.851	0.270	1.603	0.817	1487.9	17.5	1539.5	43.8	1517.5	28.8	-0.03
0.093	1.050	3.420	1.965	0.268	1.661	0.794	1480.7	19.9	1529.9	45.1	1509.0	30.4	-0.03
0.118	0.910	5.874	1.844	0.361	1.604	0.822	1925.4	16.3	1988.5	54.6	1957.4	31.5	-0.03
0.104	0.931	4.418	1.642	0.310	1.353	0.715	1688.7	17.2	1738.5	41.1	1715.7	26.8	-0.03
0.094	0.972	3.487	1.845	0.270	1.568	0.791	1500.7	18.4	1541.8	42.9	1524.2	28.7	-0.03
0.086	0.941	2.788	1.850	0.236	1.593	0.809	1332.9	18.2	1365.2	39.1	1352.4	27.3	-0.02
0.097	0.951	3.776	1.887	0.282	1.630	0.816	1568.0	17.8	1603.2	46.1	1587.7	29.8	-0.02
0.093	0.905	3.445	1.701	0.268	1.440	0.768	1496.3	17.1	1528.5	39.1	1514.7	26.4	-0.02
0.087	0.989	2.866	1.769	0.240	1.466	0.748	1356.7	19.1	1384.1	36.4	1373.0	26.3	-0.02
0.093	0.963	3.407	1.862	0.266	1.594	0.802	1489.0	18.2	1518.8	43.0	1506.0	28.8	-0.02
0.117	1.269	5.637	2.034	0.351	1.589	0.705	1904.3	22.8	1938.9	53.0	1921.8	34.5	-0.02
0.078	1.131	2.142	2.044	0.199	1.702	0.782	1149.6	22.5	1169.7	36.3	1162.4	27.9	-0.02
0.094	0.991	3.475	1.828	0.268	1.535	0.774	1507.0	18.7	1532.7	41.8	1521.6	28.4	-0.02
0.106	1.235	4.559	1.980	0.313	1.547	0.699	1726.2	22.7	1755.5	47.4	1741.8	32.4	-0.02
0.112	0.821	5.133	1.512	0.334	1.270	0.710	1826.0	14.9	1856.2	40.8	1841.6	25.4	-0.02
0.111	1.025	5.041	1.843	0.330	1.531	0.761	1810.8	18.6	1840.6	48.8	1826.2	30.8	-0.02
0.096	1.206	3.655	2.111	0.276	1.733	0.769	1547.5	22.7	1572.5	48.2	1561.5	33.1	-0.02
0.093	0.915	3.398	1.783	0.265	1.530	0.798	1491.3	17.3	1513.7	41.2	1504.0	27.6	-0.01
0.112	0.733	5.189	1.622	0.335	1.447	0.838	1837.1	13.3	1863.8	46.7	1850.8	27.3	-0.01
0.087	1.087	2.834	1.821	0.237	1.461	0.711	1353.6	21.0	1372.1	36.0	1364.6	27.0	-0.01
0.119	0.965	5.859	1.900	0.357	1.637	0.814	1943.4	17.3	1967.2	55.3	1955.3	32.4	-0.01
0.117	1.125	5.602	2.024	0.349	1.683	0.778	1905.0	20.2	1927.7	55.8	1916.4	34.3	-0.01
0.093	0.965	3.356	1.847	0.262	1.574	0.795	1484.4	18.3	1501.5	42.0	1494.1	28.5	-0.01
0.099	0.936	3.909	1.774	0.286	1.507	0.783	1606.1	17.5	1623.5	43.1	1615.6	28.3	-0.01

0.099	0.875	3.909	1.705	0.286	1.463	0.789	1606.6	16.3	1623.1	41.9	1615.6	27.2	-0.01
0.077	1.098	2.056	1.851	0.193	1.490	0.720	1127.9	21.9	1138.1	31.0	1134.3	25.0	-0.01
0.085	1.126	2.656	1.973	0.227	1.620	0.759	1310.0	21.9	1320.9	38.6	1316.4	28.7	-0.01
0.079	1.128	2.164	1.997	0.200	1.648	0.767	1163.5	22.4	1173.1	35.2	1169.4	27.4	-0.01
0.185	0.928	13.286	1.849	0.522	1.600	0.815	2694.3	15.3	2709.0	70.4	2700.2	34.3	-0.01
0.087	1.107	2.797	1.880	0.234	1.520	0.729	1350.9	21.4	1357.9	37.1	1354.8	27.7	-0.01
0.113	0.691	5.154	1.502	0.332	1.334	0.811	1840.7	12.5	1849.5	42.8	1845.0	25.2	0.00
0.102	0.840	4.196	1.689	0.297	1.466	0.803	1669.2	15.5	1676.9	43.1	1673.2	27.3	0.00
0.077	1.003	2.008	1.879	0.190	1.588	0.787	1115.4	20.0	1120.1	32.6	1118.2	25.2	0.00
0.092	1.210	3.247	2.071	0.256	1.681	0.753	1465.9	23.0	1470.8	44.1	1468.4	31.7	0.00
0.113	0.995	5.186	1.898	0.333	1.616	0.798	1847.6	18.0	1853.4	51.9	1850.3	31.8	0.00
0.097	1.267	3.658	2.078	0.275	1.647	0.726	1560.0	23.8	1564.6	45.6	1562.3	32.6	0.00
0.113	0.904	5.190	1.742	0.333	1.489	0.787	1848.9	16.4	1853.5	47.8	1850.9	29.2	0.00
0.094	0.937	3.405	1.653	0.263	1.362	0.717	1503.7	17.7	1507.3	36.5	1505.5	25.6	0.00
0.107	0.935	4.618	1.718	0.313	1.442	0.757	1751.2	17.1	1754.2	44.1	1752.5	28.3	0.00
0.110	0.894	4.927	1.703	0.324	1.449	0.776	1806.1	16.3	1808.3	45.5	1806.9	28.3	0.00
0.093	0.937	3.333	1.768	0.260	1.500	0.780	1488.2	17.7	1489.9	39.8	1488.9	27.3	0.00
0.105	1.214	4.403	2.234	0.305	1.875	0.801	1712.4	22.3	1714.0	56.2	1712.9	36.3	0.00
0.107	1.043	4.568	1.838	0.311	1.513	0.748	1743.1	19.1	1744.3	46.1	1743.4	30.2	0.00
0.093	1.170	3.365	1.895	0.261	1.490	0.696	1496.7	22.1	1496.7	39.7	1496.3	29.2	0.00
0.114	0.837	5.291	1.741	0.336	1.526	0.824	1868.6	15.1	1867.2	49.3	1867.5	29.3	0.00
0.114	1.199	5.304	2.016	0.336	1.620	0.737	1870.9	21.6	1868.9	52.4	1869.5	33.9	0.00
0.101	0.845	4.046	1.668	0.290	1.437	0.790	1645.5	15.7	1642.7	41.6	1643.6	26.8	0.00
0.129	0.896	6.783	1.661	0.381	1.399	0.753	2085.8	15.8	2082.1	49.6	2083.6	29.0	0.00
0.093	0.845	3.348	1.550	0.260	1.300	0.719	1494.3	16.0	1491.5	34.5	1492.3	24.0	0.00
0.081	0.970	2.350	1.909	0.209	1.645	0.814	1231.3	19.0	1226.1	36.6	1227.6	26.8	0.00
0.096	1.039	3.547	2.049	0.269	1.766	0.823	1541.9	19.5	1535.3	48.1	1537.7	31.9	0.00
0.093	0.806	3.323	1.659	0.259	1.450	0.810	1491.1	15.3	1483.9	38.3	1486.5	25.6	0.00
0.109	0.853	4.795	1.627	0.318	1.385	0.764	1790.0	15.5	1779.6	42.9	1784.0	27.0	0.01
0.094	0.842	3.407	1.916	0.262	1.721	0.869	1511.6	15.9	1502.6	46.0	1506.0	29.6	0.01
0.100	1.351	3.902	2.058	0.284	1.553	0.668	1620.3	25.1	1610.0	44.1	1614.1	32.7	0.01
0.096	0.847	3.546	1.859	0.268	1.655	0.855	1544.3	15.9	1533.1	45.0	1537.5	29.0	0.01

0.111	1.317	4.941	1.965	0.323	1.458	0.635	1816.9	23.9	1803.3	45.7	1809.2	32.6	0.01
0.117	0.908	5.539	1.593	0.343	1.308	0.696	1914.8	16.3	1899.9	42.9	1906.6	27.0	0.01
0.098	0.944	3.766	1.835	0.278	1.574	0.802	1593.4	17.6	1580.3	44.0	1585.5	29.0	0.01
0.114	1.036	5.208	1.726	0.332	1.381	0.689	1862.6	18.7	1846.9	44.2	1853.9	29.0	0.01
0.089	1.278	2.922	2.090	0.239	1.654	0.726	1395.4	24.5	1383.1	41.1	1387.6	31.1	0.01
0.096	0.935	3.524	1.686	0.267	1.403	0.739	1541.0	17.6	1527.0	38.0	1532.5	26.3	0.01
0.107	0.993	4.558	1.757	0.308	1.450	0.739	1752.5	18.2	1733.3	43.9	1741.6	28.8	0.01
0.094	1.116	3.409	2.153	0.262	1.842	0.819	1516.8	21.0	1499.8	49.1	1506.5	33.3	0.01
0.087	1.204	2.785	1.993	0.232	1.588	0.724	1361.6	23.2	1345.5	38.5	1351.4	29.3	0.01
0.108	1.005	4.598	1.670	0.310	1.334	0.673	1761.3	18.4	1739.1	40.5	1748.9	27.5	0.01
0.095	0.887	3.420	1.635	0.262	1.374	0.744	1521.0	16.7	1500.9	36.7	1508.9	25.4	0.01
0.095	1.167	3.435	1.850	0.263	1.435	0.671	1525.6	22.0	1503.6	38.4	1512.4	28.7	0.01
0.091	0.824	3.073	1.671	0.246	1.453	0.805	1438.9	15.7	1418.0	36.9	1426.0	25.3	0.01
0.102	1.201	4.051	2.067	0.289	1.683	0.756	1658.5	22.2	1634.4	48.4	1644.6	33.1	0.01
0.094	0.897	3.387	1.814	0.260	1.577	0.819	1515.0	16.9	1492.3	41.9	1501.3	28.1	0.02
0.096	1.023	3.525	1.787	0.267	1.465	0.735	1546.8	19.2	1523.4	39.6	1532.9	27.9	0.02
0.094	1.108	3.368	1.939	0.259	1.591	0.755	1511.6	20.9	1487.2	42.1	1496.9	29.9	0.02
0.093	0.921	3.300	1.698	0.256	1.426	0.756	1496.3	17.4	1471.2	37.4	1481.1	26.1	0.02
0.094	1.174	3.322	1.925	0.257	1.525	0.710	1501.8	22.2	1475.8	40.1	1486.1	29.6	0.02
0.110	0.965	4.753	1.765	0.314	1.477	0.761	1794.4	17.6	1762.3	45.4	1776.7	29.2	0.02
0.093	0.877	3.287	1.615	0.256	1.356	0.739	1494.7	16.6	1466.9	35.5	1477.9	24.8	0.02
0.122	0.988	5.960	1.808	0.354	1.514	0.767	1989.9	17.6	1952.0	50.8	1970.1	31.0	0.02
0.131	0.938	6.833	1.799	0.379	1.535	0.792	2110.7	16.5	2070.0	54.1	2090.0	31.4	0.02
0.106	1.234	4.390	2.178	0.301	1.795	0.778	1730.7	22.6	1694.8	53.3	1710.5	35.4	0.02
0.079	0.890	2.147	1.649	0.196	1.388	0.750	1181.0	17.6	1155.7	29.3	1164.2	22.6	0.02
0.114	1.022	5.119	1.848	0.326	1.540	0.765	1861.4	18.5	1820.6	48.7	1839.3	30.9	0.02
0.105	0.768	4.290	1.613	0.297	1.419	0.814	1712.8	14.1	1674.9	41.7	1691.4	26.2	0.02
0.095	0.837	3.442	1.649	0.262	1.421	0.786	1537.9	15.8	1497.7	37.9	1514.1	25.6	0.03
0.101	1.153	3.945	1.825	0.283	1.415	0.666	1648.3	21.4	1604.2	40.1	1623.0	29.1	0.03
0.114	0.899	5.144	1.631	0.326	1.361	0.732	1871.2	16.2	1819.6	43.0	1843.4	27.4	0.03
0.088	0.911	2.786	1.703	0.230	1.439	0.765	1376.6	17.5	1336.7	34.6	1351.8	25.1	0.03
0.085	1.215	2.568	2.213	0.219	1.849	0.795	1315.8	23.6	1277.5	42.7	1291.6	31.8	0.03

0.102	0.776	3.949	1.581	0.282	1.378	0.793	1652.0	14.4	1602.5	39.0	1623.7	25.3	0.03
0.092	1.115	3.167	1.801	0.249	1.415	0.679	1476.8	21.1	1431.0	36.2	1449.2	27.4	0.03
0.110	0.860	4.748	1.614	0.312	1.366	0.751	1806.9	15.6	1750.2	41.7	1775.8	26.7	0.03
0.104	1.343	4.197	2.279	0.292	1.842	0.762	1704.3	24.7	1649.4	53.4	1673.3	36.7	0.03
0.109	1.068	4.644	1.864	0.308	1.528	0.745	1789.1	19.5	1731.1	46.2	1757.2	30.7	0.03
0.111	1.031	4.806	1.644	0.314	1.280	0.626	1818.5	18.7	1759.1	39.3	1786.0	27.3	0.03
0.095	0.886	3.395	1.742	0.258	1.499	0.798	1534.8	16.7	1481.5	39.6	1503.2	27.0	0.03
0.094	0.805	3.250	1.713	0.252	1.512	0.831	1500.9	15.2	1447.9	39.1	1469.2	26.3	0.04
0.097	1.161	3.524	2.159	0.264	1.821	0.803	1567.0	21.8	1508.4	48.8	1532.6	33.6	0.04
0.087	0.940	2.675	1.880	0.224	1.628	0.819	1355.5	18.1	1301.5	38.3	1321.7	27.4	0.04
0.112	1.064	4.821	1.917	0.313	1.595	0.770	1829.6	19.3	1754.3	48.8	1788.6	31.7	0.04
0.080	1.186	2.132	1.895	0.194	1.478	0.685	1192.2	23.4	1141.9	30.9	1159.1	25.9	0.04
0.084	0.856	2.456	1.770	0.212	1.548	0.824	1295.7	16.7	1238.3	34.8	1259.1	25.2	0.04
0.080	0.946	2.169	1.769	0.196	1.494	0.774	1206.7	18.6	1152.4	31.5	1171.1	24.3	0.05
0.095	1.072	3.352	1.994	0.255	1.682	0.793	1534.8	20.2	1464.6	43.9	1493.2	30.7	0.05
0.088	1.018	2.748	1.996	0.227	1.718	0.818	1381.5	19.6	1317.1	40.8	1341.5	29.3	0.05
0.123	0.798	5.869	1.665	0.345	1.461	0.818	2007.0	14.2	1910.1	48.1	1956.6	28.5	0.05
0.097	1.133	3.493	1.870	0.261	1.488	0.707	1573.0	21.2	1492.4	39.5	1525.7	29.1	0.05
0.108	0.806	4.437	1.621	0.297	1.407	0.793	1770.2	14.7	1678.5	41.4	1719.3	26.5	0.05
0.097	1.305	3.444	2.274	0.258	1.862	0.776	1562.9	24.5	1480.6	49.1	1514.5	35.2	0.05
0.088	0.853	2.746	1.576	0.226	1.325	0.732	1386.8	16.4	1313.0	31.4	1341.0	23.2	0.05
0.078	0.918	1.975	1.773	0.183	1.518	0.793	1149.8	18.2	1086.0	30.3	1107.1	23.6	0.06
0.113	0.858	4.834	1.771	0.310	1.550	0.824	1848.7	15.5	1742.1	47.1	1790.7	29.4	0.06
0.091	1.363	2.920	2.152	0.234	1.666	0.706	1440.1	26.0	1353.5	40.5	1387.2	32.0	0.06
0.097	0.798	3.420	1.653	0.255	1.448	0.813	1571.9	14.9	1465.3	37.8	1509.0	25.7	0.07
0.190	0.933	12.698	1.643	0.485	1.352	0.713	2743.4	15.3	2547.0	56.6	2657.5	30.5	0.07
0.098	1.574	3.457	2.755	0.256	2.261	0.794	1587.7	29.4	1468.3	59.1	1517.5	42.5	0.08
0.081	1.339	2.110	2.056	0.190	1.560	0.674	1212.6	26.3	1120.4	32.0	1151.9	27.9	0.08
0.108	1.101	4.240	2.000	0.286	1.670	0.781	1758.4	20.1	1621.8	47.7	1681.8	32.3	0.08
0.096	0.838	3.218	1.656	0.244	1.429	0.789	1539.8	15.8	1408.8	36.1	1461.5	25.3	0.09
0.182	0.898	11.517	1.784	0.460	1.541	0.808	2669.0	14.9	2438.5	62.3	2566.0	32.8	0.09
0.080	1.120	2.005	1.919	0.183	1.559	0.740	1189.0	22.1	1081.0	31.0	1117.1	25.7	0.09

0.098	0.942	3.338	1.850	0.248	1.592	0.808	1577.9	17.6	1429.6	40.7	1490.0	28.5	0.09
0.093	1.173	2.961	1.962	0.232	1.573	0.728	1483.8	22.2	1342.6	38.0	1397.7	29.4	0.10
0.099	0.683	3.468	1.531	0.253	1.370	0.831	1614.4	12.7	1453.7	35.6	1520.0	23.9	0.10
0.098	0.936	3.312	1.811	0.246	1.550	0.797	1582.8	17.5	1416.1	39.3	1483.8	27.9	0.11
0.095	1.214	3.069	2.014	0.235	1.608	0.728	1526.1	22.9	1358.8	39.3	1425.0	30.4	0.11
0.107	0.981	4.021	1.737	0.272	1.434	0.737	1750.4	18.0	1553.4	39.5	1638.5	27.9	0.11
0.112	0.854	4.403	1.659	0.285	1.423	0.781	1834.7	15.5	1615.8	40.5	1713.0	27.1	0.12
0.098	0.769	3.205	1.898	0.238	1.735	0.892	1578.7	14.4	1377.7	42.9	1458.3	29.0	0.13
0.088	0.930	2.455	1.757	0.204	1.491	0.779	1371.9	17.9	1194.2	32.4	1258.8	25.0	0.13
0.105	1.231	3.773	1.934	0.260	1.492	0.677	1716.0	22.6	1492.3	39.6	1587.0	30.6	0.13
0.090	1.810	2.618	2.581	0.210	1.840	0.653	1432.6	34.5	1230.4	41.1	1305.8	37.2	0.14
0.094	1.039	2.815	1.887	0.218	1.576	0.772	1500.5	19.6	1272.2	36.3	1359.5	27.9	0.15
0.096	1.061	2.767	1.871	0.209	1.541	0.752	1547.6	19.9	1224.2	34.3	1346.6	27.5	0.21
0.089	0.884	2.276	1.489	0.186	1.198	0.615	1399.2	17.0	1099.9	24.2	1204.9	20.8	0.21
0.131	0.907	5.214	1.711	0.289	1.451	0.772	2107.2	15.9	1638.9	41.9	1854.8	28.8	0.22
0.096	0.901	2.718	1.621	0.205	1.348	0.724	1552.0	16.9	1201.9	29.5	1333.3	23.8	0.23
0.086	1.225	2.015	2.823	0.170	2.543	0.891	1343.3	23.7	1009.7	47.4	1120.6	37.6	0.25
0.115	1.076	3.790	1.998	0.240	1.683	0.792	1876.6	19.4	1384.3	41.8	1590.6	31.6	0.26
0.099	0.876	2.083	1.792	0.153	1.563	0.822	1603.7	16.3	916.6	26.7	1143.1	24.3	0.43
0.092	0.833	1.560	1.586	0.123	1.350	0.754	1475.6	15.8	745.1	19.0	954.6	19.4	0.50
0.071	0.849	0.805	1.619	0.082	1.379	0.763	952.1	17.4	510.7	13.5	599.4	14.6	0.46
0.071	0.752	0.858	1.504	0.088	1.302	0.765	951.7	15.4	543.1	13.5	628.8	14.0	0.43
0.072	0.863	0.861	1.529	0.087	1.262	0.684	974.6	17.6	539.4	13.0	630.8	14.3	0.45
0.074	0.745	0.862	1.697	0.085	1.525	0.856	1037.4	15.1	524.2	15.3	631.3	15.8	0.49
0.070	0.632	0.866	1.571	0.089	1.438	0.876	935.0	13.0	552.3	15.2	633.3	14.7	0.41
0.073	0.715	0.924	1.427	0.092	1.235	0.738	1003.8	14.5	568.9	13.4	664.3	13.8	0.43
0.076	0.921	0.924	1.774	0.088	1.516	0.791	1105.4	18.4	542.1	15.7	664.3	17.2	0.51
0.072	0.896	0.939	2.041	0.095	1.834	0.874	978.5	18.3	585.0	20.5	672.4	19.9	0.40
0.072	0.941	0.942	1.734	0.095	1.456	0.761	979.5	19.2	586.6	16.3	674.1	16.9	0.40
0.072	0.745	0.943	1.651	0.095	1.474	0.842	983.4	15.2	585.9	16.5	674.5	16.1	0.40
0.072	0.928	0.943	1.793	0.095	1.534	0.795	992.6	18.9	583.4	17.1	674.5	17.5	0.41

0.073	0.940	0.968	1.561	0.096	1.246	0.636	1020.2	19.0	590.4	14.0	687.4	15.5	0.42
0.071	0.873	0.989	1.834	0.101	1.613	0.836	955.1	17.9	621.4	19.1	698.2	18.4	0.35
0.073	0.817	1.002	1.657	0.100	1.442	0.803	1006.9	16.6	614.3	16.9	705.0	16.7	0.39
0.074	0.790	1.021	1.595	0.101	1.386	0.791	1029.5	16.0	618.8	16.3	714.7	16.2	0.40
0.072	0.934	1.028	1.966	0.104	1.730	0.845	981.9	19.0	636.5	20.9	717.8	20.0	0.35
0.074	0.715	1.028	2.062	0.100	1.934	0.929	1050.2	14.4	616.6	22.7	717.9	21.0	0.41
0.075	0.943	1.049	1.617	0.102	1.313	0.685	1055.7	19.0	627.1	15.7	728.5	16.7	0.41
0.074	0.747	1.053	1.936	0.103	1.786	0.905	1037.6	15.1	634.7	21.6	730.4	20.0	0.39
0.077	0.857	1.062	1.991	0.100	1.797	0.878	1129.5	17.1	612.1	20.9	734.6	20.6	0.46
0.075	0.828	1.125	1.678	0.109	1.459	0.805	1062.3	16.7	667.9	18.5	765.3	17.9	0.37
0.075	0.787	1.144	2.060	0.110	1.904	0.910	1078.6	15.8	673.3	24.3	774.3	22.1	0.38
0.077	0.813	1.146	2.153	0.108	1.993	0.914	1121.8	16.2	660.8	25.0	775.3	23.1	0.41
0.078	0.888	1.160	1.686	0.108	1.433	0.772	1138.6	17.7	663.1	18.0	781.8	18.2	0.42
0.078	0.793	1.191	2.037	0.111	1.877	0.905	1134.2	15.8	681.4	24.2	796.4	22.2	0.40
0.078	0.733	1.324	1.496	0.123	1.304	0.776	1151.9	14.5	747.2	18.4	856.4	17.2	0.35
0.082	0.705	1.385	1.753	0.123	1.605	0.888	1237.0	13.8	748.4	22.6	882.6	20.5	0.40
0.079	0.757	1.395	1.624	0.127	1.437	0.825	1183.0	15.0	773.1	20.9	886.7	19.0	0.35
0.079	0.630	1.399	1.459	0.128	1.316	0.833	1179.0	12.4	776.8	19.2	888.6	17.1	0.34
0.077	0.786	1.435	1.885	0.136	1.713	0.884	1113.7	15.7	820.3	26.3	903.5	22.3	0.26
0.078	0.641	1.435	1.676	0.133	1.549	0.898	1155.9	12.7	804.4	23.4	903.7	19.9	0.30
0.079	0.847	1.620	2.218	0.148	2.050	0.913	1182.2	16.7	889.8	34.0	977.8	27.5	0.25
0.082	0.714	1.708	1.439	0.151	1.250	0.750	1251.6	14.0	904.8	21.1	1011.6	18.3	0.28
0.084	0.648	1.815	1.876	0.157	1.761	0.927	1292.9	12.6	938.6	30.7	1050.8	24.3	0.27
0.084	0.846	1.825	1.608	0.157	1.368	0.758	1302.1	16.4	939.5	23.9	1054.6	20.9	0.28
0.081	0.896	1.842	7.566	0.164	7.513	0.993	1228.5	17.6	981.5	135.4	1060.7	95.0	0.20
0.085	0.678	1.894	1.491	0.161	1.328	0.815	1321.7	13.1	963.3	23.7	1079.0	19.6	0.27
0.086	0.684	1.898	1.569	0.160	1.412	0.846	1334.3	13.2	959.5	25.1	1080.5	20.7	0.28
0.086	0.755	1.901	2.017	0.161	1.870	0.913	1332.1	14.6	961.6	33.3	1081.3	26.5	0.28
0.096	0.850	1.965	1.629	0.149	1.390	0.767	1546.5	16.0	893.1	23.1	1103.5	21.7	0.42
0.088	0.876	2.111	2.038	0.174	1.839	0.880	1388.1	16.8	1031.5	35.0	1152.3	27.7	0.26
0.084	0.773	2.179	1.827	0.188	1.655	0.877	1297.4	15.0	1109.3	33.6	1174.4	25.1	0.14
0.088	0.889	2.347	1.622	0.194	1.357	0.735	1374.8	17.1	1144.6	28.4	1226.6	22.8	0.17

0.090	0.728	2.426	1.479	0.197	1.288	0.768	1416.5	13.9	1156.5	27.2	1250.3	21.1	0.18
0.090	0.880	2.437	1.793	0.197	1.562	0.820	1420.5	16.8	1159.2	33.1	1253.6	25.5	0.18
0.090	0.599	2.504	1.352	0.202	1.212	0.788	1426.6	11.4	1185.0	26.2	1273.3	19.4	0.17
0.091	0.861	2.564	1.676	0.205	1.438	0.784	1441.1	16.4	1202.4	31.5	1290.5	24.2	0.17
0.092	0.747	2.641	1.469	0.208	1.265	0.743	1473.0	14.2	1216.3	28.0	1312.0	21.4	0.17
0.089	0.803	2.672	1.528	0.217	1.301	0.740	1410.9	15.4	1266.4	29.8	1320.8	22.3	0.10
0.090	0.906	2.678	2.004	0.215	1.788	0.864	1431.3	17.3	1256.9	40.7	1322.5	29.2	0.12
0.091	0.796	2.720	1.535	0.216	1.312	0.749	1456.4	15.1	1259.5	29.9	1334.0	22.5	0.14
0.093	0.795	2.743	1.622	0.214	1.414	0.801	1491.8	15.0	1247.8	32.0	1340.1	23.9	0.16
0.091	0.755	2.769	1.646	0.220	1.463	0.834	1455.5	14.4	1280.8	33.9	1347.3	24.3	0.12
0.092	0.701	2.775	1.877	0.219	1.741	0.911	1466.8	13.3	1276.1	40.2	1348.7	27.6	0.13
0.092	0.781	2.782	1.515	0.219	1.298	0.749	1469.4	14.8	1277.5	30.0	1350.7	22.4	0.13
0.091	0.767	2.787	1.862	0.223	1.696	0.886	1443.0	14.6	1295.7	39.7	1352.0	27.4	0.10
0.092	0.811	2.836	1.716	0.223	1.512	0.829	1471.3	15.4	1298.7	35.5	1365.0	25.4	0.12
0.092	0.756	2.954	1.527	0.232	1.327	0.777	1473.9	14.4	1345.8	32.2	1395.8	22.9	0.09
0.092	0.719	3.095	1.459	0.245	1.270	0.761	1458.1	13.7	1414.2	32.2	1431.4	22.2	0.03
0.092	0.638	3.105	1.445	0.244	1.296	0.819	1473.3	12.1	1408.1	32.7	1433.9	22.0	0.04
0.094	0.836	3.126	1.663	0.242	1.437	0.794	1504.9	15.8	1395.4	36.0	1439.0	25.3	0.07
0.092	0.670	3.165	2.103	0.251	1.993	0.942	1460.3	12.7	1441.1	51.3	1448.5	31.9	0.01
0.094	0.799	3.212	1.571	0.249	1.353	0.771	1502.0	15.1	1432.0	34.7	1460.1	24.0	0.05
0.094	0.780	3.215	1.570	0.249	1.362	0.784	1499.7	14.8	1434.9	35.0	1460.9	24.0	0.04
0.094	0.735	3.230	1.524	0.249	1.335	0.791	1508.8	13.9	1434.7	34.3	1464.4	23.4	0.05
0.091	0.784	3.243	1.550	0.259	1.337	0.769	1439.9	14.9	1487.1	35.4	1467.4	23.8	-0.03
0.093	0.925	3.249	1.635	0.253	1.348	0.714	1490.4	17.5	1454.5	35.0	1468.8	25.1	0.02
0.094	0.771	3.249	1.558	0.250	1.353	0.784	1516.6	14.6	1436.9	34.8	1469.0	23.9	0.05
0.094	0.853	3.264	1.684	0.253	1.452	0.793	1500.8	16.1	1453.4	37.7	1472.4	25.8	0.03
0.094	0.713	3.265	1.618	0.253	1.453	0.848	1498.2	13.5	1455.8	37.8	1472.8	24.9	0.03
0.094	0.783	3.271	1.567	0.253	1.357	0.780	1503.3	14.8	1454.8	35.2	1474.3	24.1	0.03
0.093	0.963	3.273	1.850	0.255	1.580	0.798	1488.3	18.2	1465.6	41.3	1474.5	28.4	0.02
0.093	0.696	3.305	1.453	0.258	1.275	0.776	1484.1	13.2	1481.4	33.7	1482.1	22.4	0.00
0.094	0.721	3.311	1.611	0.256	1.440	0.840	1508.7	13.6	1466.9	37.7	1483.7	24.8	0.03
0.094	0.610	3.318	1.438	0.255	1.302	0.836	1516.8	11.5	1463.9	34.0	1485.3	22.2	0.03

0.094	0.784	3.320	1.636	0.255	1.436	0.814	1514.9	14.8	1466.0	37.6	1485.8	25.2	0.03
0.093	0.972	3.327	1.777	0.259	1.487	0.762	1488.6	18.4	1487.2	39.4	1487.4	27.4	0.00
0.094	0.882	3.332	1.816	0.256	1.588	0.827	1513.6	16.6	1471.7	41.6	1488.6	28.0	0.03
0.093	0.662	3.340	1.603	0.262	1.460	0.870	1479.9	12.6	1498.6	38.9	1490.5	24.8	-0.01
0.093	0.648	3.350	1.603	0.262	1.466	0.877	1485.5	12.3	1498.5	39.1	1492.8	24.8	-0.01
0.094	0.861	3.364	1.753	0.260	1.528	0.816	1505.4	16.3	1490.2	40.5	1496.1	27.1	0.01
0.093	1.154	3.367	1.983	0.262	1.612	0.748	1493.0	21.8	1500.0	43.0	1496.7	30.6	0.00
0.094	0.869	3.442	1.938	0.264	1.733	0.864	1516.7	16.4	1512.8	46.6	1514.1	30.1	0.00
0.114	7.629	3.722	7.784	0.237	1.542	0.152	1863.9	137.7	1370.9	38.0	1576.2	117.5	0.26

			systematic uncertainties (1s %)		206/238	207/235	207/206					
			age uncertainty primary ref. Mat.		0.0447	0.0432	0.014		ThO=	<0.5%		
			long term scatter/variance		1	1	0.25		UO=	<0.5%		
			decay constant uncertainties		0.05	0.1	0.11				Tera-Wa	
			common-Pb compositional variati		1	1	1				(not common	
Sample	Grain	^{204}Pb	^{206}Pb	^{207}Pb	^{208}Pb	^{232}Th	^{235}U	Th/U	Pbppm	Thppm	Uppm	^{238}U/^{206}Pb	1σ %
CS12-23_27	0	89	5826	533	959	6564	123	0.8	0.9	1.7	2.1	2.6202	4.08
CS12-23_34	0	-38	565372	45842	67104	638322	23620	0.4	85.0	167.1	403.6	4.7409	1.10
CS12-23_28	0	-180	94615	7417	13609	133282	4050	0.5	14.2	34.9	69.2	5.0027	1.15
CS12-23_09	0	-521	124119	10088	21758	221478	5442	0.6	18.7	58.0	93.0	4.9560	0.73
CS12-23_24	0	-299	114128	9196	13483	148469	4806	0.5	17.2	38.9	82.1	4.8665	1.05
CS12-23_15	0	571	178368	13991	32599	338541	7714	0.7	26.8	88.6	131.8	5.0411	0.91
CS12-23_50	0	-88	126459	10100	14278	129271	5376	0.4	19.0	33.8	91.9	4.9994	0.98
CS12-23_26	0	447	121056	9985	17986	173008	5360	0.5	18.2	45.3	91.6	4.9945	1.04
CS12-23_60	0	-20	618996	49748	71794	642271	26557	0.4	93.1	168.2	453.8	4.9089	0.90
CS12-23_56	0	65	95551	7698	12363	122234	4220	0.4	14.4	32.0	72.1	4.9938	1.12
CS12-23_12	0	288	285147	22502	25547	271105	13282	0.3	42.9	71.0	227.0	5.2807	0.92
CS12-23_33	0	309	66640	5517	10523	103580	2952	0.5	10.0	27.1	50.4	4.9808	1.39
CS12-23_59	0	82	224217	21308	55312	388105	7321	0.8	33.7	101.6	125.1	3.8010	1.05
CS12-23_49	0	366	155084	12390	17026	164595	6868	0.4	23.3	43.1	117.4	5.0983	1.06
CS12-23_17	0	-337	185355	15026	41560	451750	8008	0.9	27.9	118.3	136.8	4.9584	1.15
CS12-23_39	0	202	251621	20014	47732	491614	10804	0.7	37.8	128.7	184.6	4.9983	1.02
CS12-23_31	0	-291	84241	6809	12666	135768	3637	0.6	12.7	35.6	62.2	5.0015	1.42
CS12-23_23	0	6	169801	13823	31177	298849	7435	0.6	25.5	78.3	127.1	5.0099	0.90
CS12-23_40	0	-3	80931	6588	10663	112959	3527	0.5	12.2	29.6	60.3	5.0141	1.25
CS12-23_44	0	131	232859	18414	42875	379202	10214	0.6	35.0	99.3	174.5	5.0951	0.92
CS12-23_13	0	127	97564	7815	10031	109973	4135	0.4	14.7	28.8	70.7	5.0258	1.28
CS12-23_25	0	151	147749	11914	26524	256181	6559	0.6	22.2	67.1	112.1	5.0612	1.33
CS12-23_42	0	235	148027	11897	24324	242365	6556	0.6	22.3	63.5	112.0	5.0408	1.05
CS12-23_03	0	118	182076	14920	31533	302498	8061	0.6	27.4	79.2	137.8	5.0363	0.97
CS12-23_53	0	-70	89884	7161	11622	113534	4008	0.4	13.5	29.7	68.5	5.0823	1.28
CS12-23_51	0	-26	324836	26344	41497	355276	15019	0.4	48.9	93.0	256.7	5.2488	1.21
CS12-23_20	0	336	172917	14079	32077	334062	7582	0.7	26.0	87.5	129.6	5.0564	1.20

CS12-23_35	0	298	425836	34578	64481	622159	18780	0.5	64.0	162.9	320.9	5.1014	0.96
CS12-23_30	0	-124	121549	9743	23387	239859	5393	0.7	18.3	62.8	92.1	5.1275	1.38
CS12-23_45	0	-187	145829	11683	22301	204988	6476	0.5	21.9	53.7	110.7	5.1315	1.13
CS12-23_04	0	-438	41245	3344	4310	46037	1803	0.4	6.2	12.1	30.8	5.0677	1.04
CS12-23_55	0	427	185947	14894	28847	277037	8270	0.5	28.0	72.5	141.3	5.1498	0.99
CS12-23_22	0	297	95332	7831	14620	150887	4301	0.5	14.3	39.5	73.5	5.2671	1.00
CS12-23_10	0	-264	99282	7911	10262	108047	4521	0.4	14.9	28.3	77.3	5.2433	1.53
CS12-23_01	0	547	99725	8016	9946	101445	4487	0.3	15.0	26.6	76.7	5.1719	1.11
CS12-23_19	0	160	178765	14721	19874	232202	8165	0.4	26.9	60.8	139.5	5.1640	1.23
CS12-23_43	0	14	159475	12467	19389	196802	7762	0.4	24.0	51.5	132.6	5.6443	1.23
CS12-23_14	0	-225	538139	43761	82841	811912	23879	0.5	80.9	212.6	408.1	5.1758	1.13
CS12-23_41	0	48	81098	6798	9504	88752	3550	0.4	12.2	23.2	60.7	5.0379	1.61
CS12-23_05	0	280	172076	13813	17617	172378	7822	0.3	25.9	45.1	133.7	5.3277	1.81
CS12-23_38	0	547	101763	8183	13160	139031	4781	0.4	15.3	36.4	81.7	5.4104	1.22
CS12-23_02	0	-86	138386	11340	16436	171957	6320	0.4	20.8	45.0	108.0	5.3209	1.35
CS12-23_16	0	-114	68744	5654	7319	81455	3108	0.4	10.3	21.3	53.1	5.2529	1.38
CS12-23_32	0	-118	162729	13744	29506	277419	7348	0.6	24.5	72.6	125.6	5.1510	1.16
CS12-23_52	0	68	116308	10139	14622	156714	5423	0.4	17.5	41.0	92.7	5.1785	3.91
CS12-23_08	0	-98	70642	5680	7970	82622	3417	0.4	10.6	21.6	58.4	5.6715	1.11
CS12-23_36	0	361	118594	10021	18643	240037	5994	0.6	17.8	62.9	102.4	5.6994	1.35
CS12-23_58	0	240	379436	30132	1073798	18890970	20190	14.3	57.1	4946.7	345.0	6.1384	2.65
CS12-23_57	0	585	174416	17380	37481	213778	7670	0.4	26.2	56.0	131.1	4.9880	0.96
CS12-23_29	0	-53	198954	17932	43452	482302	10705	0.7	29.9	126.3	182.9	6.2640	0.98
CS12-23_07	0	27	108570	10207	17086	225402	5931	0.6	16.3	59.0	101.4	6.3407	1.18
CS12-23_18	0	278	130969	12923	22903	341633	7910	0.7	19.7	89.5	135.2	7.0130	1.04
CS12-23_37	0	723	126800	19357	38592	204490	5337	0.6	19.1	53.5	91.2	4.8023	1.22
CS12-23_21	0	2405	1081260	107292	209219	2021688	82964	0.4	162.6	529.4	1417.7	8.9328	0.71
CS12-23_11	0	5741	1793187	192073	637316	11760950	160478	1.1	269.7	3079.6	2742.3	10.3261	0.90
CS12-17_60	0	20	234387	22927	41508	221484	7047	0.5	35.2	58.0	120.4	3.4591	1.31
CS12-17_14	0	37	213623	17146	42003	297924	9118	0.5	32.1	78.0	155.8	4.8460	0.95
CS12-17_57	0	-54	300831	34612	63299	317734	8361	0.6	45.2	83.2	142.9	3.0774	1.02
CS12-17_48	0	106	205485	20175	37619	199771	6400	0.5	30.9	52.3	109.4	3.6037	1.12
CS12-17_04	0	-62	263379	29106	45907	220737	7287	0.5	39.6	57.8	124.5	3.1649	1.30

CS12-17_17	0	166	295280	29079	62596	435133	9611	0.7	44.4	113.9	164.2	3.6403	1.34
CS12-17_19	0	179	237250	22540	26589	151281	7878	0.3	35.7	39.6	134.6	3.8353	0.96
CS12-17_31	0	135	106895	11185	32999	164482	3194	0.8	16.1	43.1	54.6	3.4229	1.07
CS12-17_20	0	424	295702	31496	47496	336556	8858	0.6	44.5	88.1	151.4	3.2957	3.45
CS12-17_46	0	317	235659	23285	30424	161931	7772	0.3	35.4	42.4	132.8	3.7393	1.00
CS12-17_58	0	127	131967	10811	33749	255607	5678	0.7	19.8	66.9	97.0	4.9136	1.30
CS12-17_07	0	506	230926	25103	34179	163256	6673	0.4	34.7	42.7	114.0	3.3215	1.21
CS12-17_33	0	162	724937	80235	184076	860777	19447	0.7	109.0	225.4	332.3	3.0925	1.22
CS12-17_11	0	-239	132577	12464	14668	81110	4663	0.3	19.9	21.2	79.7	3.9684	1.50
CS12-17_38	0	43	345899	32545	32146	181626	11646	0.2	52.0	47.6	199.0	3.9423	1.13
CS12-17_30a	0	-27	47054	4444	9583	52411	1531	0.5	7.1	13.7	26.2	3.7816	1.62
CS12-17_41	0	343	185943	17539	20489	126421	6275	0.3	28.0	33.1	107.2	3.9310	1.14
CS12-17_30b	0	-138	104299	10229	18688	93666	3451	0.4	15.7	24.5	59.0	3.7713	1.35
CS12-17_67	0	449	574503	54157	118314	688640	19309	0.5	86.4	180.3	330.0	3.9370	0.92
CS12-17_18	0	286	174086	16607	19784	106252	6017	0.3	26.2	27.8	102.8	3.9134	1.08
CS12-17_25	0	257	119139	12198	31571	164524	3755	0.7	17.9	43.1	64.2	3.5803	1.37
CS12-17_09	0	-106	116170	11730	29713	155639	3662	0.7	17.5	40.8	62.6	3.5847	1.31
CS12-17_13	0	365	358320	35489	52716	282247	11754	0.4	53.9	73.9	200.9	3.7704	1.42
CS12-17_22	0	360	251311	25211	30013	157522	7684	0.3	37.8	41.2	131.3	3.5746	1.23
CS12-17_02	0	205	268414	28305	46862	239953	8212	0.4	40.4	62.8	140.3	3.4750	0.84
CS12-17_10	0	74	170971	16069	25440	142185	5941	0.4	25.7	37.2	101.5	4.0101	1.26
CS12-17_23	0	36	115996	14994	14167	58685	2737	0.3	17.4	15.4	46.8	2.7376	1.01
CS12-17_50	0	113	277121	28146	49491	261315	8416	0.5	41.7	68.4	143.8	3.5159	0.98
CS12-17_47	0	-234	343967	32538	36862	327217	11639	0.4	51.7	85.7	198.9	3.8962	1.26
CS12-17_05	0	98	192020	21424	36537	170459	5374	0.5	28.9	44.6	91.8	3.2043	1.42
CS12-17_51	0	14	346725	33305	47118	261130	11613	0.3	52.1	68.4	198.5	3.9488	1.06
CS12-17_55	0	83	421323	40878	49888	267620	13566	0.3	63.4	70.1	231.8	3.7620	1.02
CS12-17_43	0	-147	62467	6054	36318	209530	2237	1.4	9.4	54.9	38.2	3.9994	1.52
CS12-17_40	0	-55	225488	24426	38175	191715	6670	0.4	33.9	50.2	114.0	3.3754	0.97
CS12-17_26	0	45	370640	37114	65218	329129	11753	0.4	55.7	86.2	200.8	3.6719	1.26
CS12-17_30b	0	134	80820	8147	14231	79446	2713	0.4	12.2	20.8	46.4	3.7654	1.65
CS12-17_59	0	-17	396069	43624	66866	331601	11490	0.4	59.6	86.8	196.3	3.3493	1.07
CS12-17_63	0	93	445928	52006	22937	108934	11778	0.1	67.1	28.5	201.3	3.0711	0.97
CS12-17_12	0	271	251993	24170	53438	298517	8859	0.5	37.9	78.2	151.4	4.0205	1.14

CS12-17_62	0	242	332781	34328	89273	457436	10788	0.6	50.0	119.8	184.4	3.6950	1.21
CS12-17_64	0	527	655384	63119	97688	834486	22482	0.6	98.6	218.5	384.2	3.8854	1.30
CS12-17_35	0	113	384720	36731	39357	207491	13329	0.2	57.9	54.3	227.8	3.9977	1.13
CS12-17_56	0	-264	132642	12477	17695	107454	4560	0.4	19.9	28.1	77.9	4.0394	0.88
CS12-17_01	0	71	372095	36625	60189	332234	13154	0.4	56.0	87.0	224.8	3.9647	1.04
CS12-17_45	0	352	495875	54150	81277	392710	14687	0.4	74.6	102.8	251.0	3.4027	1.40
CS12-17_21	0	484	179757	17342	24688	135501	6010	0.3	27.0	35.5	102.7	3.9542	1.20
CS12-17_08	0	-209	638378	65063	82262	642676	20582	0.5	96.0	168.3	351.7	3.7041	1.25
CS12-17_52	0	86	802459	81255	376885	1922013	26493	1.1	120.7	503.3	452.7	3.7530	0.93
CS12-17_54	0	-80	276568	28382	87365	601268	8691	1.1	41.6	157.4	148.5	3.6536	0.82
CS12-17_36	0	-85	214617	20509	25358	148606	7484	0.3	32.3	38.9	127.9	4.0178	0.90
CS12-17_29	0	-208	363978	41782	15219	67420	10051	0.1	54.7	17.7	171.8	3.1915	1.09
CS12-17_28	0	111	373936	43460	39803	188728	10954	0.3	56.2	49.4	187.2	3.3021	1.29
CS12-17_42	0	311	542226	53382	117809	893488	18338	0.7	81.5	234.0	313.4	3.8819	1.29
CS12-17_15	0	-77	473747	57735	79344	365874	12321	0.5	71.2	95.8	210.5	3.0107	1.07
CS12-17_06	0	175	222933	21353	47491	262585	7817	0.5	33.5	68.8	133.6	4.0517	1.28
CS12-17_34	0	212	249359	24024	55890	303829	8881	0.5	37.5	79.6	151.8	4.0887	0.91
CS12-17_65	0	15	507161	43245	130876	1035905	21860	0.7	76.3	271.3	373.6	4.9845	1.37
CS12-17_37	0	-53	287136	28818	54237	430727	9603	0.7	43.2	112.8	164.1	3.8572	1.35
CS12-17_53	0	16	118071	12209	22245	114744	3917	0.4	17.8	30.0	66.9	3.8403	1.30
CS12-17_66	0	-67	741402	79334	94606	434185	22877	0.3	111.5	113.7	390.9	3.6263	1.03
CS12-17_24	0	55	385928	40175	127980	891554	12665	1.1	58.0	233.5	216.4	3.8110	0.99
CS12-17_39	0	247	286617	31416	79206	421899	8709	0.7	43.1	110.5	148.8	3.5768	1.10
CS12-17_16	0	404	189922	23111	37090	342807	5675	0.9	28.6	89.8	97.0	3.4115	1.15
CS12-17_44	0	58	637609	62413	98691	885874	24157	0.6	95.9	232.0	412.8	4.3551	0.93
CS12-17_32	0	-39	862405	85300	34286	224507	35476	0.1	129.7	58.8	606.2	4.7317	1.55
CS12-17_30d	0	328	415124	38087	89680	801214	19264	0.6	62.4	209.8	329.2	5.3632	1.41
CS12-17_03	0	331	723163	68231	35676	295482	34930	0.1	108.8	77.4	596.9	5.5641	1.74
CS12-17_49	0	983	82986	21902	46041	155725	2530	0.9	12.5	40.8	43.2	3.4313	1.85
CS12-25_03	0	-192	307576	23932	35153	297374	14197	0.3	46.3	77.9	242.6	5.3507	1.03
CS12-25_45	0	-192	153429	11956	18336	167588	7133	0.4	23.1	43.9	121.9	5.2817	0.95
CS12-25_07	0	-169	207895	16688	36202	311933	8812	0.5	31.3	81.7	150.6	4.8527	1.17
CS12-25_43	0	174	201224	16696	29382	243828	8616	0.4	30.3	63.8	147.2	4.8969	1.03

CS12-25_53	0	414	500034	49333	138545	873551	15203	0.9	75.2	228.7	259.8	3.5230	0.84
CS12-25_47	0	66	284379	28149	64181	406212	9077	0.7	42.8	106.4	155.1	3.6058	0.91
CS12-25_24	0	694	314571	35522	57183	302854	8533	0.5	47.3	79.3	145.8	3.1010	1.11
CS12-25_06	0	334	288802	23649	45555	409354	12482	0.5	43.4	107.2	213.3	4.9404	0.83
CS12-25_46	0	30	577528	52502	51357	351393	20720	0.3	86.9	92.0	354.1	4.1519	0.72
CS12-25_35	0	148	541935	53942	104400	670267	16858	0.6	81.5	175.5	288.1	3.6165	0.73
CS12-25_17	0	341	581473	62654	80675	486504	16921	0.4	87.4	127.4	289.1	3.3357	1.32
CS12-25_23	0	57	248358	23578	46469	310148	8769	0.5	37.4	81.2	149.8	4.0089	0.98
CS12-25_08	0	-165	542243	42705	66850	579988	25280	0.4	81.5	151.9	432.0	5.2784	1.00
CS12-25_44	0	570	396087	38204	71743	484881	13024	0.6	59.6	127.0	222.6	3.8166	0.90
CS12-25_63	0	181	605023	57047	58352	385588	20585	0.3	91.0	101.0	351.8	3.9708	1.16
CS12-25_20	0	401	146936	12870	15015	117319	5738	0.3	22.1	30.7	98.0	4.4644	1.11
CS12-25_40	0	397	719559	74754	119682	732132	21887	0.5	108.2	191.7	374.0	3.4884	0.95
CS12-25_34	0	68	594468	67747	100425	583521	16081	0.6	89.4	152.8	274.8	3.1051	0.87
CS12-25_16	0	164	882301	114413	120526	591799	20689	0.4	132.7	155.0	353.5	2.7323	1.23
CS12-25_68	0	-208	724996	94726	85013	435902	16720	0.4	109.0	114.1	285.7	2.6740	0.89
CS12-25_11	0	-103	54577	4542	7834	60584	2267	0.4	8.2	15.9	38.7	4.7985	1.40
CS12-25_15	0	86	619673	68585	140525	759286	17022	0.7	93.2	198.8	290.9	3.2150	1.13
CS12-25_29	0	-100	1125270	107480	136699	908465	38565	0.4	169.2	237.9	659.0	3.9366	1.17
CS12-25_02	0	40	443133	49977	57858	296828	12329	0.4	66.6	77.7	210.7	3.1929	1.26
CS12-25_32	0	262	394969	33051	49927	403476	16268	0.4	59.4	105.7	278.0	4.7369	1.00
CS12-25_25	0	247	479141	56025	59037	315754	12823	0.4	72.1	82.7	219.1	3.0586	1.23
CS12-25_36	0	187	265964	24434	53826	385162	9416	0.6	40.0	100.9	160.9	4.1209	1.21
CS12-25_13	0	337	417990	39470	66740	440701	14515	0.5	62.9	115.4	248.0	4.0495	1.13
CS12-25_64	0	15	56845	5429	23427	150994	1917	1.2	8.5	39.5	32.8	3.9301	1.39
CS12-25_18	0	-32	220902	23649	38285	236448	6300	0.6	33.2	61.9	107.7	3.3563	1.06
CS12-25_22	0	-88	137100	10767	17507	158191	6302	0.4	20.6	41.4	107.7	5.2772	1.25
CS12-25_61	0	134	70311	5470	7668	72129	3227	0.3	10.6	18.9	55.1	5.3431	1.59
CS12-25_26	0	161	184842	19089	27159	161396	5660	0.4	27.8	42.3	96.7	3.5417	1.15
CS12-25_31	0	313	137838	10883	15981	143356	6329	0.3	20.7	37.5	108.2	5.3254	0.69
CS12-25_69	0	170	195217	46026	133010	435346	2948	2.3	29.4	114.0	50.4	1.7424	1.25
CS12-25_28	0	366	293357	54366	67694	244338	5135	0.7	44.1	64.0	87.8	2.0489	1.14
CS12-25_01	0	407	124955	10159	15929	117442	5340	0.3	18.8	30.8	91.3	5.0114	1.49
CS12-25_74	0	685	680853	69354	129444	819444	22031	0.6	102.4	214.6	376.5	3.6640	1.13

CS12-25_38	0	-348	253050	21658	21719	157434	10220	0.2	38.1	41.2	174.6	4.6491	0.83
CS12-25_33	0	-177	377219	35883	43979	306010	12902	0.4	56.7	80.1	220.5	3.9477	0.98
CS12-25_30	0	43	264649	20708	38297	344465	12310	0.4	39.8	90.2	210.4	5.4780	0.88
CS12-25_09	0	25	493558	47385	33150	227249	16896	0.2	74.2	59.5	288.7	3.9427	1.15
CS12-25_21	0	100	837186	94009	50240	288517	23291	0.2	125.9	75.5	398.0	3.2237	1.11
CS12-25_67	0	-157	97577	7620	9827	85464	4544	0.3	14.7	22.4	77.6	5.4654	1.33
CS12-25_51	0	188	1028720	87854	265662	2073558	41493	0.8	154.7	543.0	709.0	4.6713	0.98
CS12-25_41	0	170	168282	15085	14455	99809	6594	0.2	25.3	26.1	112.7	4.4534	0.81
CS12-25_65	0	-90	129063	10178	13094	120032	6011	0.3	19.4	31.4	102.7	5.4148	0.98
CS12-25_10	0	490	117772	9429	16762	153387	5391	0.4	17.7	40.2	92.1	5.3750	1.01
CS12-25_48	0	-81	226777	29011	45249	219129	5609	0.6	34.1	57.4	95.8	2.8593	1.23
CS12-25_37	0	114	183669	24804	24027	113622	4432	0.4	27.6	29.8	75.7	2.7567	1.18
CS12-25_39	0	214	87172	9489	47633	266487	2525	1.6	13.1	69.8	43.2	3.3429	1.26
CS12-25_27	0	-96	89116	7093	9673	87925	4328	0.3	13.4	23.0	74.0	5.5479	1.26
CS12-25_19	0	316	98618	7815	25544	230978	4664	0.8	14.8	60.5	79.7	5.4478	1.30
CS12-25_54	0	117	1500846	300961	281797	1021849	26278	0.6	225.7	267.6	449.0	2.0151	0.91
CS12-25_42	0	274	43195	3375	5637	50598	2034	0.4	6.5	13.2	34.8	5.4249	1.75
CS12-25_12	0	437	292806	27342	50366	372953	11447	0.5	44.0	97.7	195.6	4.4030	1.18
CS12-25_75	0	-49	496140	43959	57192	446977	20572	0.3	74.6	117.0	351.5	4.7431	1.54
CS12-25_14	0	45	1753713	210916	157794	881183	51742	0.3	263.7	230.7	884.2	3.3481	0.91
CS12-25_50	0	171	1272555	349300	230090	745732	19799	0.6	191.4	195.3	338.3	1.7601	0.92
CS12-25_04	0	187	620977	65317	95030	659549	25116	0.4	93.4	172.7	429.2	4.2448	3.59
CS12-25_72	0	203	26093	2949	3042	2396	1275	0.0	3.9	0.6	21.8	5.5661	1.81
CS12-25_57	rutile?	123	33308	3908	8438	44018	1559	0.4	5.0	11.5	26.6	5.3340	2.02
CS12-25_60	0	537	59434	6399	10526	48957	2939	0.3	8.9	12.8	50.2	5.7493	0.90
CS12-25_62	0	808	66791	7614	8688	19704	3315	0.1	10.0	5.2	56.6	5.6918	1.37
CS12-25_66	0	391	60117	6690	8455	24931	3161	0.1	9.0	6.5	54.0	5.9267	1.61
CS12-25_76	0	-3	35217	4247	5998	16359	1759	0.1	5.3	4.3	30.1	5.6978	1.58
CS12-25_56	rutile?	80	47321	5865	6551	7526	2408	0.0	7.1	2.0	41.1	5.7755	1.49
CS12-25_71	0	523	45336	6881	9864	14884	2013	0.1	6.8	3.9	34.4	5.0532	1.78
CS12-25_59	0	78	2912	1373	2952	26	75	0.0	0.4	0.0	1.3	2.7261	6.72
CS12-25_55	rutile?	107	50630	7556	10749	12467	2371	0.1	7.6	3.3	40.5	5.3568	1.31
CS12-25_70	0	193	4230	1783	3906	171	132	0.0	0.6	0.0	2.3	3.3746	5.77
CS12-25_58	rutile?	452	23709	4296	7117	4687	1115	0.1	3.6	1.2	19.1	5.3654	1.78

CS12-25_49	0	211	10440	2247	3787	1266	440	0.0	1.6	0.3	7.5	4.3323	3.87
CS12-25_73	0	231	5678	1445	2980	408	234	0.0	0.9	0.1	4.0	4.6810	3.36
CS12-24_15	0	570	771580	66096	84393	825517	29924	0.4	116.0	216.2	511.3	3.7332	4.04
CS12-24_08	0	112	154178	11978	15018	159618	6474	0.4	23.2	41.8	110.6	4.8882	1.19
CS12-24_42	0	396	140538	11578	16224	196611	7115	0.4	21.1	51.5	121.6	4.6346	7.53
CS12-24_38	0	140	482590	38157	47930	445096	20615	0.3	72.6	116.5	352.3	4.8999	1.37
CS12-24_09	0	-433	464577	50518	78112	546544	12426	0.7	69.9	143.1	212.3	3.0913	1.01
CS12-24_40	0	530	1282806	102599	138135	1174307	55106	0.3	192.9	307.5	941.7	4.8982	0.94
CS12-24_71	0	215	142109	11516	15504	158402	6338	0.4	21.4	41.5	108.3	4.9684	1.58
CS12-24_66	0	-154	113805	9163	14343	143587	5048	0.4	17.1	37.6	86.3	4.9491	1.28
CS12-24_25	0	57	277060	28007	82269	600078	8337	1.1	41.7	157.1	142.5	3.4291	0.77
CS12-24_03	0	211	373221	29779	43238	362665	16256	0.3	56.1	95.0	277.8	4.9996	0.96
CS12-24_32	0	89	632277	51083	89057	766262	27923	0.4	95.1	200.6	477.1	4.9428	1.20
CS12-24_24	0	215	343439	27144	41320	457994	14627	0.5	51.6	119.9	249.9	4.9899	1.02
CS12-24_70	0	186	336985	31814	34085	277931	11111	0.4	50.7	72.8	189.9	3.8033	1.22
CS12-24_52	0	280	510072	55126	89551	603995	14083	0.7	76.7	158.2	240.7	3.1703	0.95
CS12-24_64	0	82	188429	15056	29063	297921	8246	0.6	28.3	78.0	140.9	4.9990	1.18
CS12-24_47	0	271	293833	23678	47655	473977	12627	0.6	44.2	124.1	215.8	4.9556	0.97
CS12-24_27	0	278	429821	34863	65245	663583	18896	0.5	64.6	173.8	322.9	4.9891	1.15
CS12-24_21	0	245	127573	10124	18805	173855	5541	0.5	19.2	45.5	94.7	5.0169	1.19
CS12-24_53	0	174	257015	24123	34834	288949	8477	0.5	38.7	75.7	144.9	3.8591	1.05
CS12-24_29	0	-155	114058	10025	33861	297828	4153	1.1	17.2	78.0	71.0	4.2050	1.33
CS12-24_39	0	-94	751277	92550	41219	198184	18851	0.2	113.0	51.9	322.1	2.8461	0.96
CS12-24_30	0	278	803201	90654	86765	519612	20572	0.4	120.8	136.1	351.5	3.0083	1.06
CS12-24_02	0	21	433133	34770	48840	466602	18817	0.4	65.1	122.2	321.5	5.0593	1.02
CS12-24_28	0	314	224964	25263	32857	207870	6137	0.5	33.8	54.4	104.9	3.1027	0.97
CS12-24_34	0	185	416556	44141	71833	434737	11948	0.6	62.6	113.8	204.2	3.3307	0.94
CS12-24_12	0	91	176904	18751	36067	245686	5264	0.7	26.6	64.3	89.9	3.3857	1.29
CS12-24_36	0	-169	127703	10412	12501	122607	5901	0.3	19.2	32.1	100.8	5.1718	1.62
CS12-24_43	0	-297	170895	13899	23439	214445	7446	0.4	25.7	56.2	127.2	5.0005	0.98
CS12-24_37	0	189	274504	22041	35380	314830	12059	0.4	41.3	82.4	206.1	5.1249	1.02
CS12-24_67	0	305	172177	13488	21682	210177	7954	0.4	25.9	55.0	135.9	5.3160	1.14
CS12-24_19	0	-33	530874	50492	105837	744188	17584	0.6	79.8	194.9	300.5	3.8239	1.26

CS12-24_45	0	-273	165510	13369	27321	229013	7371	0.5	24.9	60.0	126.0	5.0775	1.21
CS12-24_56	0	215	87458	7124	8117	85731	3933	0.3	13.2	22.4	67.2	5.1016	1.27
CS12-24_50	0	283	82361	7973	11537	70410	2667	0.4	12.4	18.4	45.6	3.7501	1.16
CS12-24_63	0	375	422172	33630	56760	517920	18349	0.4	63.5	135.6	313.6	5.0895	0.98
CS12-24_17	0	254	216046	17300	28597	263133	9635	0.4	32.5	68.9	164.7	5.1383	1.10
CS12-24_35	0	389	217459	19193	21154	161463	7877	0.3	32.7	42.3	134.6	4.2287	1.15
CS12-24_04	0	-113	160316	12866	16294	153157	7020	0.3	24.1	40.1	120.0	5.1454	1.46
CS12-24_11	0	199	158312	12773	24133	253702	6847	0.6	23.8	66.4	117.0	5.0426	1.16
CS12-24_13	0	-137	1364178	111132	175049	1595016	59895	0.4	205.2	417.7	1023.5	4.9926	0.96
CS12-24_23	0	49	796195	64382	106955	1005568	34414	0.4	119.7	263.3	588.1	5.0547	0.90
CS12-24_05	0	416	917455	84898	108674	813810	32338	0.4	138.0	213.1	552.6	4.0715	0.83
CS12-24_55	0	270	277352	22456	35435	365550	12464	0.4	41.7	95.7	213.0	5.0744	1.37
CS12-24_22	0	228	851220	69675	114701	1096081	37536	0.4	128.0	287.0	641.4	5.0530	1.17
CS12-24_54	0	791	82132	6586	6827	68510	3739	0.3	12.4	17.9	63.9	5.2195	1.38
CS12-24_20	0	372	1731585	139050	225967	1993696	76542	0.4	260.4	522.1	1308.0	5.1126	1.29
CS12-24_65	0	-249	133458	11001	17869	186138	5916	0.5	20.1	48.7	101.1	5.0805	1.18
CS12-24_59	0	359	305002	24580	48647	433957	13717	0.5	45.9	113.6	234.4	5.1544	0.94
CS12-24_26	0	267	161977	12818	21494	243032	7304	0.5	24.4	63.6	124.8	5.2873	1.65
CS12-24_14	0	567	832920	66124	87886	856414	38487	0.3	125.3	224.3	657.7	5.3032	1.04
CS12-24_33	0	-93	307902	24973	33416	323800	13761	0.4	46.3	84.8	235.1	5.1039	1.03
CS12-24_44	0	13	1041855	118149	36080	199287	29615	0.1	156.7	52.2	506.1	3.2568	0.75
CS12-24_10	0	20	128728	10451	21809	232475	5572	0.6	19.4	60.9	95.2	5.0401	1.41
CS12-24_16	0	386	99934	8116	14051	123669	4444	0.4	15.0	32.4	75.9	5.1160	1.15
CS12-24_60	0	23	62266	6924	10920	64109	1785	0.6	9.4	16.8	30.5	3.2993	1.26
CS12-24_31	0	-1	91576	7407	11876	107190	4127	0.4	13.8	28.1	70.5	5.2129	1.25
CS12-24_61	0	696	330491	36132	51281	281841	9867	0.4	49.7	73.8	168.6	3.4146	1.30
CS12-24_68	0	509	877924	72609	95377	835297	39040	0.3	132.0	218.7	667.1	5.0678	1.40
CS12-24_72	0	69	363265	34075	44928	357660	13186	0.4	54.6	93.7	225.3	4.2057	0.84
CS12-24_06	0	379	337900	34522	86856	575207	10960	0.8	50.8	150.6	187.3	3.7943	1.10
CS12-24_46	0	714	2690795	220800	266596	2372532	125773	0.3	404.7	621.3	2149.2	5.2886	0.97
CS12-24_62	0	273	903326	109819	159973	832549	25438	0.5	135.9	218.0	434.7	3.2113	1.45
CS12-24_58	0	800	1283856	107575	180387	1385225	58078	0.4	193.1	362.7	992.5	5.2369	0.99
CS12-24_51	0	510	2108395	173474	282552	2682114	104656	0.4	317.1	702.3	1788.4	5.6742	0.84
CS12-24_01	0	237	718117	59563	211464	2551578	41002	1.0	108.0	668.1	700.7	6.1547	2.48

CS12-24_69	0	762	1918331	186403	81749	727247	87085	0.1	288.5	190.4	1488.1	5.2057	2.84
CS12-24_48	0	502	1407008	109559	198388	2695334	90744	0.5	211.6	705.8	1550.7	7.4598	1.08
CS12-24_49	0	1420	272912	44060	84647	236161	8512	0.4	41.0	61.8	145.5	3.5466	2.32
CS12-24_41	0	1220	2464200	173259	235413	285139300	252324	17.3	370.6	74664.6	4311.8	11.6727	1.03

asserburg lead corrected)		Data for Wetherill plot (not common lead corrected)					Ages						Discordance
$^{207}Pb/^{206}Pb$	1σ %	$^{207}Pb/^{235}U$	1σ %	$^{206}Pb/^{238}U$	1σ %	Rho	$^{207}Pb/^{206}Pb$	2σ abs	$^{206}Pb/^{238}U$	2σ abs	$^{207}Pb/^{235}U$	2σ abs	6-38/7-6
0.0960	3.58	5.0483	5.42	0.3816	4.20	0.75	1547.4	67.2	2084.0	147.9	1827.5	87.9	-34.7
0.0796	1.03	2.3136	1.48	0.2109	1.49	0.74	1186.8	20.4	1233.8	33.4	1216.5	20.8	-4.0
0.0775	1.10	2.1362	1.57	0.1999	1.53	0.73	1135.2	22.0	1174.7	32.8	1160.6	21.5	-3.5
0.0789	1.03	2.1942	1.23	0.2018	1.24	0.59	1169.7	20.4	1184.9	26.7	1179.2	17.0	-1.3
0.0799	1.01	2.2639	1.43	0.2055	1.45	0.74	1195.5	19.9	1204.7	31.8	1201.1	19.9	-0.8
0.0785	0.80	2.1456	1.18	0.1984	1.35	0.77	1159.1	15.9	1166.6	28.9	1163.6	16.3	-0.6
0.0789	0.89	2.1756	1.30	0.2000	1.40	0.75	1170.1	17.7	1175.5	30.0	1173.3	17.9	-0.5
0.0790	0.92	2.1809	1.36	0.2002	1.45	0.76	1173.0	18.3	1176.5	31.0	1175.0	18.8	-0.3
0.0799	0.78	2.2423	1.16	0.2037	1.35	0.78	1193.7	15.4	1195.2	29.3	1194.4	16.2	-0.1
0.0793	1.06	2.1897	1.52	0.2002	1.51	0.74	1180.7	20.9	1176.6	32.3	1177.8	21.0	0.3
0.0771	0.85	2.0110	1.22	0.1894	1.36	0.75	1122.6	16.9	1118.0	27.9	1119.2	16.5	0.4
0.0796	1.06	2.2017	1.72	0.2008	1.71	0.81	1186.4	20.9	1179.5	36.8	1181.6	23.8	0.6
0.0944	0.81	3.4239	1.30	0.2631	1.45	0.81	1516.7	15.2	1505.6	38.9	1509.9	20.2	0.7
0.0787	0.80	2.1281	1.29	0.1961	1.46	0.82	1165.2	15.8	1154.6	30.7	1158.0	17.7	0.9
0.0801	0.86	2.2263	1.41	0.2017	1.52	0.81	1199.3	17.0	1184.3	32.9	1189.3	19.6	1.3
0.0800	0.78	2.2068	1.26	0.2001	1.43	0.82	1197.8	15.3	1175.7	30.7	1183.2	17.4	1.8
0.0800	0.99	2.2047	1.71	0.1999	1.74	0.83	1197.3	19.5	1175.0	37.2	1182.5	23.6	1.9
0.0801	0.79	2.2021	1.16	0.1996	1.35	0.77	1198.2	15.6	1173.2	28.8	1181.7	16.1	2.1
0.0801	1.34	2.2011	1.81	0.1994	1.60	0.69	1198.9	26.4	1172.3	34.3	1181.4	25.0	2.2
0.0795	0.85	2.1504	1.22	0.1963	1.36	0.75	1184.6	16.8	1155.2	28.7	1165.2	16.8	2.5
0.0802	1.08	2.2001	1.65	0.1990	1.63	0.78	1202.6	21.2	1169.8	34.7	1181.1	22.8	2.7
0.0800	1.18	2.1779	1.76	0.1976	1.67	0.76	1196.5	23.3	1162.3	35.4	1174.0	24.2	2.9
0.0802	0.93	2.1940	1.38	0.1984	1.45	0.76	1203.1	18.3	1166.6	30.9	1179.2	19.0	3.0
0.0804	1.05	2.2007	1.40	0.1986	1.40	0.69	1207.3	20.6	1167.6	29.8	1181.3	19.4	3.3
0.0802	1.05	2.1737	1.63	0.1968	1.63	0.78	1200.9	20.6	1157.9	34.4	1172.7	22.4	3.6
0.0788	0.82	2.0703	1.44	0.1905	1.57	0.84	1168.4	16.3	1124.2	32.4	1139.0	19.5	3.8
0.0805	1.07	2.1939	1.58	0.1978	1.56	0.76	1209.1	21.0	1163.3	33.2	1179.1	21.8	3.8

0.0802	0.84	2.1671	1.24	0.1960	1.39	0.77	1202.3	16.5	1153.9	29.3	1170.5	17.1	4.0
0.0802	1.13	2.1570	1.76	0.1950	1.71	0.78	1203.1	22.2	1148.6	35.8	1167.3	24.1	4.5
0.0804	0.88	2.1604	1.40	0.1949	1.51	0.80	1207.8	17.3	1147.7	31.7	1168.4	19.3	5.0
0.0813	1.11	2.2102	1.49	0.1973	1.44	0.70	1228.0	21.7	1161.0	30.6	1184.3	20.6	5.5
0.0805	1.02	2.1554	1.40	0.1942	1.41	0.71	1210.2	20.1	1144.0	29.5	1166.8	19.2	5.5
0.0796	1.02	2.0815	1.40	0.1899	1.42	0.71	1185.9	20.2	1120.6	29.1	1142.7	19.1	5.5
0.0798	1.12	2.0982	1.88	0.1907	1.83	0.82	1192.7	22.1	1125.3	37.7	1148.2	25.5	5.7
0.0807	1.12	2.1510	1.55	0.1934	1.49	0.72	1214.7	22.0	1139.5	31.1	1165.4	21.2	6.2
0.0812	0.90	2.1669	1.50	0.1936	1.59	0.82	1226.1	17.7	1141.1	33.1	1170.5	20.6	6.9
0.0773	0.87	1.8885	1.48	0.1772	1.59	0.83	1130.0	17.3	1051.5	30.7	1077.0	19.5	6.9
0.0813	0.82	2.1658	1.37	0.1932	1.51	0.82	1229.6	16.2	1138.7	31.4	1170.1	18.8	7.4
0.0830	1.15	2.2696	1.96	0.1985	1.89	0.82	1268.4	22.5	1167.2	40.3	1202.9	27.2	8.0
0.0804	1.58	2.0806	2.39	0.1877	2.07	0.76	1207.6	31.1	1108.9	42.1	1142.4	32.2	8.2
0.0800	1.25	2.0367	1.73	0.1848	1.58	0.71	1195.9	24.7	1093.3	31.7	1127.9	23.3	8.6
0.0810	1.07	2.0973	1.70	0.1879	1.68	0.79	1220.8	21.1	1110.2	34.2	1147.9	23.2	9.1
0.0816	1.15	2.1412	1.77	0.1904	1.71	0.78	1236.2	22.5	1123.4	35.1	1162.2	24.3	9.1
0.0827	1.10	2.2126	1.58	0.1941	1.54	0.74	1262.1	21.4	1143.7	32.1	1185.0	21.8	9.4
0.0848	1.18	2.2569	4.08	0.1931	4.04	0.96	1311.0	22.9	1138.2	83.8	1198.9	55.9	13.2
0.0815	1.03	1.9799	1.49	0.1763	1.50	0.74	1233.0	20.3	1046.8	28.9	1108.7	20.0	15.1
0.0826	1.02	1.9981	1.67	0.1755	1.68	0.81	1260.5	19.9	1042.1	32.2	1114.9	22.3	17.3
0.0802	0.78	1.7998	2.75	0.1629	2.84	0.96	1201.0	15.5	972.9	51.0	1045.4	35.3	19.0
0.0977	1.41	2.6988	1.68	0.2005	1.39	0.57	1580.3	26.3	1177.9	29.8	1328.1	24.6	25.5
0.0893	0.84	1.9646	1.26	0.1596	1.40	0.78	1410.4	16.0	954.8	24.8	1103.5	16.8	32.3
0.0938	1.11	2.0389	1.60	0.1577	1.55	0.74	1504.2	20.9	944.0	27.2	1128.6	21.6	37.2
0.0987	1.60	1.9394	1.89	0.1426	1.44	0.55	1599.5	29.8	859.3	23.2	1094.8	25.0	46.3
0.1519	3.18	4.3588	3.40	0.2082	1.58	0.36	2367.2	54.3	1219.4	35.0	1704.6	54.6	48.5
0.0987	0.94	1.5232	1.15	0.1119	1.23	0.62	1600.3	17.5	684.0	16.0	939.8	13.9	57.3
0.1063	1.05	1.4192	1.36	0.0968	1.35	0.66	1737.5	19.3	595.9	15.3	897.0	16.0	65.7
0.0996	1.04	3.9664	1.65	0.2891	1.65	0.79	1615.7	19.4	1637.0	47.5	1627.3	26.4	-1.3
0.0800	0.87	2.2751	1.25	0.2064	1.38	0.75	1197.0	17.1	1209.4	30.3	1204.6	17.5	-1.0
0.1103	0.94	4.9403	1.36	0.3249	1.43	0.75	1804.6	17.0	1813.8	45.0	1809.2	22.6	-0.5
0.0980	1.17	3.7494	1.60	0.2775	1.50	0.70	1587.2	21.9	1578.7	41.9	1582.0	25.3	0.5
0.1091	1.10	4.7496	1.68	0.3160	1.64	0.77	1783.9	20.0	1770.0	50.6	1776.0	27.8	0.8

0.0976	0.82	3.6950	1.54	0.2747	1.67	0.87	1578.8	15.3	1564.6	46.3	1570.3	24.4	0.9
0.0942	0.76	3.3860	1.20	0.2607	1.39	0.80	1512.7	14.4	1493.6	36.9	1501.2	18.6	1.3
0.1030	0.93	4.1477	1.39	0.2922	1.47	0.77	1679.1	17.1	1652.3	42.6	1663.8	22.5	1.6
0.1063	1.27	4.4441	3.67	0.3034	3.59	0.94	1736.4	23.3	1708.3	107.0	1720.6	59.0	1.6
0.0963	1.01	3.5498	1.40	0.2674	1.42	0.72	1553.9	19.0	1527.7	38.5	1538.4	21.9	1.7
0.0808	1.09	2.2655	1.67	0.2035	1.64	0.78	1215.9	21.3	1194.2	35.6	1201.6	23.2	1.8
0.1059	1.09	4.3951	1.61	0.3011	1.57	0.75	1730.4	20.0	1696.6	46.7	1711.4	26.2	2.0
0.1128	0.99	5.0270	1.55	0.3234	1.58	0.79	1845.0	17.9	1806.1	49.6	1823.9	25.9	2.1
0.0928	0.93	3.2229	1.74	0.2520	1.80	0.86	1483.9	17.6	1448.7	46.6	1462.7	26.7	2.4
0.0932	0.95	3.2597	1.45	0.2537	1.51	0.78	1492.8	18.0	1457.3	39.2	1471.5	22.3	2.4
0.0961	1.18	3.5033	1.99	0.2644	1.91	0.82	1550.3	22.2	1512.5	51.2	1528.0	30.9	2.4
0.0937	1.01	3.2850	1.50	0.2544	1.52	0.76	1502.0	19.1	1461.1	39.5	1477.5	23.0	2.7
0.0966	1.30	3.5295	1.86	0.2652	1.68	0.73	1559.1	24.4	1516.2	45.3	1533.8	29.0	2.8
0.0936	0.83	3.2777	1.21	0.2540	1.36	0.76	1500.7	15.8	1459.1	35.5	1475.8	18.7	2.8
0.0940	1.02	3.3118	1.46	0.2555	1.48	0.74	1508.9	19.3	1466.9	38.6	1483.8	22.6	2.8
0.1007	1.35	3.8760	1.90	0.2793	1.69	0.72	1636.9	25.0	1587.9	47.5	1608.7	30.2	3.0
0.1007	1.27	3.8717	1.80	0.2790	1.65	0.73	1637.1	23.6	1586.1	46.3	1607.8	28.7	3.1
0.0969	1.05	3.5435	1.75	0.2652	1.74	0.81	1566.1	19.7	1516.5	46.8	1537.0	27.3	3.2
0.1010	1.25	3.8936	1.73	0.2797	1.59	0.71	1642.4	23.1	1590.1	44.6	1612.3	27.6	3.2
0.1034	0.85	4.1003	1.16	0.2878	1.31	0.72	1685.8	15.7	1630.4	37.5	1654.4	18.8	3.3
0.0928	1.12	3.1898	1.66	0.2494	1.61	0.76	1484.1	21.2	1435.2	41.2	1454.7	25.4	3.3
0.1285	0.91	6.4695	1.33	0.3653	1.42	0.76	2077.6	16.0	2007.2	48.9	2041.8	23.1	3.4
0.1025	0.88	4.0188	1.28	0.2844	1.40	0.76	1670.3	16.2	1613.6	39.8	1638.0	20.7	3.4
0.0950	0.85	3.3618	1.50	0.2567	1.61	0.84	1528.9	16.0	1472.7	42.2	1495.5	23.1	3.7
0.1113	1.03	4.7863	1.74	0.3121	1.74	0.82	1820.4	18.8	1751.0	53.2	1782.5	28.8	3.8
0.0943	1.00	3.2913	1.43	0.2532	1.46	0.74	1514.2	18.9	1455.2	37.9	1479.0	22.0	3.9
0.0978	0.93	3.5827	1.35	0.2658	1.43	0.76	1582.5	17.4	1519.5	38.7	1545.7	21.3	4.0
0.0936	1.18	3.2245	1.91	0.2500	1.82	0.80	1499.5	22.4	1438.7	46.8	1463.1	29.2	4.1
0.1068	0.97	4.3597	1.34	0.2963	1.39	0.72	1745.1	17.7	1672.7	40.9	1704.7	21.9	4.1
0.0998	1.08	3.7474	1.63	0.2723	1.61	0.77	1621.2	20.0	1552.6	44.2	1581.6	25.9	4.2
0.0980	1.35	3.5875	2.12	0.2656	1.93	0.78	1586.7	25.2	1518.3	52.1	1546.8	33.1	4.3
0.1079	1.00	4.4405	1.44	0.2986	1.47	0.74	1764.5	18.3	1684.2	43.4	1719.9	23.6	4.6
0.1167	1.06	5.2373	1.41	0.3256	1.40	0.69	1906.4	19.1	1817.1	44.1	1858.7	23.8	4.7
0.0937	0.93	3.2132	1.44	0.2487	1.52	0.79	1502.8	17.5	1431.9	38.9	1460.4	22.1	4.7

0.1001	1.01	3.7323	1.56	0.2706	1.57	0.78	1625.3	18.8	1544.0	43.0	1578.3	24.6	5.0
0.0964	0.99	3.4196	1.62	0.2574	1.64	0.81	1555.7	18.6	1476.4	43.2	1508.9	25.1	5.1
0.0945	1.03	3.2581	1.50	0.2501	1.51	0.75	1518.2	19.4	1439.2	38.8	1471.1	23.1	5.2
0.0940	1.21	3.2086	1.47	0.2476	1.33	0.60	1509.0	22.8	1425.9	34.0	1459.2	22.5	5.5
0.0955	1.07	3.3207	1.47	0.2522	1.45	0.71	1538.5	20.1	1449.9	37.5	1485.9	22.7	5.8
0.1084	1.12	4.3893	1.77	0.2939	1.72	0.79	1772.2	20.5	1660.9	50.1	1710.3	28.9	6.3
0.0963	1.11	3.3559	1.61	0.2529	1.56	0.75	1553.4	20.8	1453.4	40.6	1494.2	24.9	6.4
0.1015	0.96	3.7751	1.55	0.2700	1.60	0.81	1651.0	17.7	1540.7	43.8	1587.5	24.6	6.7
0.1005	0.98	3.6918	1.33	0.2665	1.37	0.70	1633.9	18.3	1522.8	37.0	1569.6	21.0	6.8
0.1027	0.92	3.8749	1.20	0.2737	1.30	0.68	1673.9	17.0	1559.6	35.8	1608.5	19.2	6.8
0.0956	0.93	3.2803	1.26	0.2489	1.35	0.71	1540.5	17.4	1432.8	34.6	1476.4	19.5	7.0
0.1160	0.98	5.0096	1.44	0.3133	1.48	0.76	1895.6	17.6	1757.1	45.3	1821.0	24.0	7.3
0.1125	1.21	4.6944	1.75	0.3028	1.64	0.74	1839.8	21.8	1705.4	48.8	1766.2	28.8	7.3
0.0985	1.07	3.4961	1.65	0.2576	1.64	0.78	1595.4	19.9	1477.6	43.0	1526.3	25.8	7.4
0.1229	0.95	5.6258	1.41	0.3322	1.47	0.76	1998.7	16.9	1848.8	47.0	1920.1	24.0	7.5
0.0957	1.26	3.2545	1.78	0.2468	1.63	0.72	1541.5	23.6	1422.0	41.4	1470.2	27.2	7.7
0.0950	1.07	3.2037	1.38	0.2446	1.36	0.66	1529.0	20.2	1410.5	34.2	1458.1	21.1	7.8
0.0844	1.12	2.3328	1.75	0.2006	1.70	0.78	1301.1	21.7	1178.7	36.4	1222.3	24.5	9.4
0.1012	0.89	3.6148	1.60	0.2593	1.68	0.85	1645.7	16.6	1486.0	44.5	1552.8	25.1	9.7
0.1025	1.51	3.6788	1.97	0.2604	1.64	0.66	1670.0	27.9	1491.9	43.6	1566.8	31.0	10.7
0.1079	0.92	4.1001	1.35	0.2758	1.44	0.76	1764.0	16.7	1570.0	39.9	1654.3	21.8	11.0
0.1036	1.03	3.7453	1.40	0.2624	1.41	0.71	1689.0	18.9	1502.1	37.7	1581.1	22.2	11.1
0.1097	0.88	4.2276	1.38	0.2796	1.49	0.80	1794.7	16.0	1589.3	41.7	1679.4	22.4	11.4
0.1205	0.97	4.8663	1.47	0.2931	1.52	0.78	1963.0	17.2	1657.1	44.3	1796.4	24.5	15.6
0.0980	1.06	3.1000	1.38	0.2296	1.37	0.67	1585.7	19.8	1332.5	32.8	1432.7	21.0	16.0
0.0993	1.06	2.8928	1.85	0.2113	1.84	0.83	1611.3	19.7	1235.9	41.3	1380.0	27.6	23.3
0.0920	1.16	2.3652	1.80	0.1865	1.73	0.78	1468.2	22.0	1102.1	35.0	1232.2	25.4	24.9
0.0950	1.27	2.3534	2.14	0.1797	2.01	0.81	1528.3	24.0	1065.5	39.3	1228.6	30.0	30.3
0.2699	2.18	10.8398	2.85	0.2914	2.11	0.65	3305.3	34.2	1648.7	61.0	2509.5	51.7	50.1
0.0769	0.84	1.9804	1.31	0.1869	1.44	0.79	1118.3	16.8	1104.5	29.2	1108.9	17.5	1.2
0.0772	0.88	2.0131	1.27	0.1893	1.38	0.75	1125.1	17.5	1117.8	28.3	1119.9	17.0	0.7
0.0799	0.80	2.2691	1.39	0.2061	1.54	0.84	1194.4	15.7	1207.9	33.9	1202.7	19.4	-1.1
0.0809	0.89	2.2757	1.33	0.2042	1.44	0.77	1218.0	17.4	1197.9	31.3	1204.8	18.6	1.6

0.0988	0.73	3.8634	1.08	0.2838	1.31	0.78	1600.9	13.7	1610.7	37.1	1606.1	17.2	-0.6
0.0990	0.75	3.7847	1.15	0.2773	1.36	0.79	1605.7	14.0	1577.9	37.8	1589.5	18.3	1.7
0.1122	0.72	4.9877	1.29	0.3225	1.50	0.86	1835.8	13.0	1801.8	46.9	1817.2	21.7	1.9
0.0807	0.65	2.2512	1.02	0.2024	1.30	0.81	1214.2	12.9	1188.3	28.2	1197.2	14.2	2.1
0.0899	0.76	2.9840	1.01	0.2409	1.23	0.71	1423.3	14.5	1391.1	30.8	1403.5	15.2	2.3
0.0993	0.79	3.7856	1.04	0.2765	1.24	0.70	1611.8	14.7	1573.7	34.6	1589.7	16.6	2.4
0.1061	0.84	4.3826	1.54	0.2998	1.66	0.86	1733.0	15.5	1690.3	49.0	1709.1	25.2	2.5
0.0924	0.85	3.1771	1.27	0.2494	1.40	0.77	1476.0	16.2	1435.6	35.9	1451.6	19.4	2.7
0.0781	0.80	2.0400	1.25	0.1895	1.42	0.80	1150.2	16.0	1118.4	29.0	1128.9	16.9	2.8
0.0957	0.74	3.4575	1.13	0.2620	1.34	0.79	1542.8	13.8	1500.1	35.9	1517.6	17.6	2.8
0.0931	0.77	3.2302	1.36	0.2518	1.53	0.85	1489.3	14.5	1448.0	39.6	1464.4	20.9	2.8
0.0861	0.83	2.6579	1.35	0.2240	1.49	0.82	1340.4	16.0	1302.9	35.1	1316.8	19.8	2.8
0.1027	0.69	4.0564	1.15	0.2867	1.38	0.83	1673.0	12.8	1624.8	39.6	1645.6	18.5	2.9
0.1133	0.77	5.0292	1.13	0.3221	1.33	0.77	1853.2	14.0	1799.7	41.6	1824.2	19.0	2.9
0.1282	0.76	6.4660	1.42	0.3660	1.59	0.87	2073.3	13.4	2010.5	54.7	2041.3	24.7	3.0
0.1313	0.69	6.7658	1.09	0.3740	1.34	0.81	2115.0	12.2	2048.1	46.8	2081.3	19.1	3.2
0.0827	1.21	2.3746	1.83	0.2084	1.72	0.76	1261.6	23.6	1220.3	38.1	1235.0	25.8	3.3
0.1104	0.78	4.7343	1.35	0.3110	1.51	0.84	1806.7	14.1	1745.8	46.1	1773.3	22.3	3.4
0.0941	0.71	3.2960	1.34	0.2540	1.54	0.87	1511.1	13.4	1459.2	40.1	1480.1	20.6	3.4
0.1113	0.82	4.8045	1.48	0.3132	1.61	0.85	1820.9	14.9	1756.4	49.4	1785.7	24.6	3.5
0.0835	0.77	2.4304	1.23	0.2111	1.41	0.81	1281.8	15.0	1234.7	31.7	1251.7	17.5	3.7
0.1159	0.72	5.2227	1.40	0.3269	1.59	0.88	1894.0	12.9	1823.6	50.3	1856.3	23.6	3.7
0.0914	0.71	3.0574	1.38	0.2427	1.57	0.88	1455.3	13.4	1400.5	39.5	1422.1	20.9	3.8
0.0925	0.70	3.1493	1.30	0.2469	1.51	0.87	1478.4	13.2	1422.7	38.4	1444.8	19.8	3.8
0.0947	0.96	3.3210	1.67	0.2544	1.72	0.83	1522.2	18.1	1461.4	44.7	1486.0	25.7	4.0
0.1072	0.83	4.4019	1.32	0.2979	1.46	0.80	1752.3	15.2	1681.1	43.0	1712.7	21.6	4.1
0.0788	1.20	2.0576	1.71	0.1895	1.60	0.73	1166.8	23.7	1118.6	32.8	1134.8	23.1	4.1
0.0783	1.13	2.0191	1.93	0.1872	1.88	0.83	1153.9	22.3	1106.0	38.2	1122.0	25.9	4.2
0.1028	0.89	3.9987	1.43	0.2824	1.52	0.80	1674.6	16.5	1603.2	43.1	1633.9	22.9	4.3
0.0786	0.83	2.0333	1.04	0.1878	1.21	0.66	1161.3	16.5	1109.3	24.7	1126.7	14.1	4.5
0.2322	0.71	18.3663	1.42	0.5739	1.60	0.89	3067.3	11.4	2923.9	75.0	3009.1	26.9	4.7
0.1841	0.97	12.3830	1.47	0.4881	1.52	0.78	2690.1	16.0	2562.3	63.9	2633.9	27.3	4.8
0.0814	1.02	2.2393	1.78	0.1995	1.79	0.83	1231.8	20.0	1172.9	38.4	1193.4	24.7	4.8
0.1006	0.85	3.7851	1.38	0.2729	1.51	0.81	1635.8	15.8	1555.6	41.5	1589.6	22.0	4.9

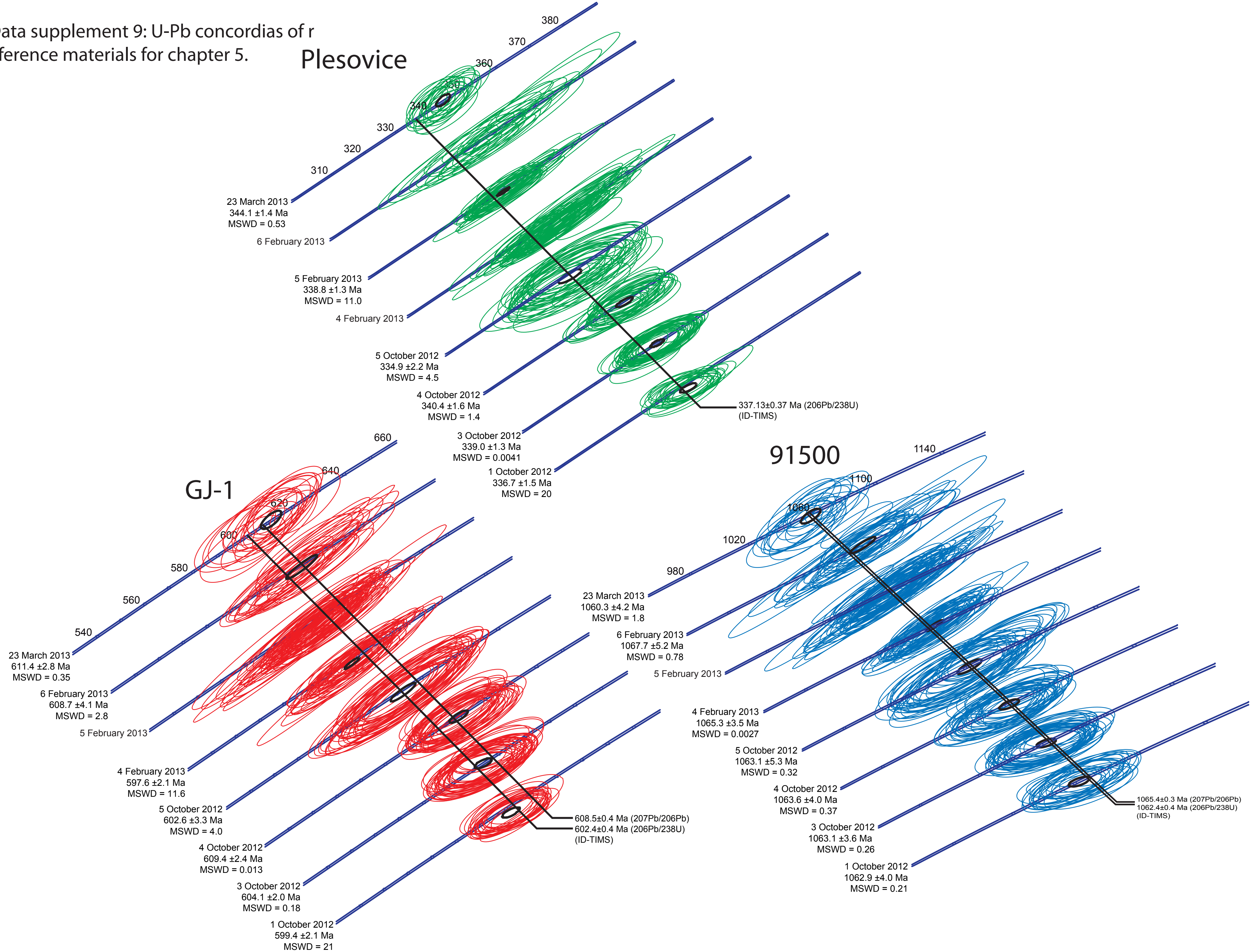
0.0852	0.83	2.5264	1.14	0.2151	1.30	0.73	1320.7	16.0	1255.9	29.7	1279.7	16.5	4.9	
0.0952	0.77	3.3246	1.22	0.2533	1.40	0.81	1532.6	14.5	1455.5	36.5	1486.9	18.8	5.0	
0.0777	0.70	1.9539	1.09	0.1825	1.33	0.81	1138.3	13.9	1080.9	26.5	1099.8	14.5	5.0	
0.0953	0.95	3.3328	1.46	0.2536	1.52	0.78	1534.9	17.8	1457.2	39.6	1488.8	22.6	5.1	
0.1122	0.85	4.7975	1.37	0.3102	1.49	0.81	1835.7	15.4	1741.7	45.4	1784.5	22.7	5.1	
0.0779	0.87	1.9632	1.57	0.1830	1.67	0.85	1143.2	17.4	1083.2	33.2	1103.0	20.9	5.2	
0.0855	0.68	2.5233	1.16	0.2141	1.40	0.84	1327.5	13.1	1250.5	31.8	1278.8	16.7	5.8	
0.0882	0.77	2.7296	1.08	0.2245	1.29	0.75	1386.9	14.7	1305.9	30.4	1336.6	15.9	5.8	
0.0787	0.94	2.0024	1.33	0.1847	1.40	0.74	1163.9	18.6	1092.5	28.1	1116.3	17.8	6.1	
0.0791	0.85	2.0271	1.29	0.1860	1.42	0.78	1173.6	16.8	1099.9	28.7	1124.6	17.4	6.3	
0.1277	0.89	6.1543	1.49	0.3497	1.59	0.83	2066.3	15.6	1933.4	52.9	1998.0	25.8	6.4	
0.1327	0.80	6.6334	1.40	0.3628	1.55	0.84	2133.8	14.0	1995.2	53.0	2063.8	24.4	6.5	
0.1105	1.10	4.5549	1.65	0.2991	1.61	0.76	1807.4	20.0	1687.1	47.7	1741.1	27.2	6.7	
0.0782	1.05	1.9429	1.62	0.1802	1.61	0.78	1152.3	20.8	1068.3	31.7	1096.0	21.5	7.3	
0.0791	0.96	2.0008	1.59	0.1836	1.64	0.82	1174.4	19.0	1086.4	32.7	1115.8	21.3	7.5	
0.1980	0.75	13.5436	1.15	0.4963	1.35	0.79	2810.0	12.3	2597.7	57.6	2718.3	21.4	7.6	
0.0795	1.33	2.0192	2.18	0.1843	2.02	0.80	1184.2	26.2	1090.6	40.3	1122.0	29.2	7.9	
0.0912	0.86	2.8556	1.44	0.2271	1.55	0.82	1451.4	16.4	1319.4	36.9	1370.3	21.4	9.1	
0.0869	0.86	2.5262	1.75	0.2108	1.84	0.88	1359.2	16.7	1233.3	41.2	1279.6	25.1	9.3	
0.1175	0.64	4.8371	1.08	0.2987	1.35	0.85	1918.7	11.4	1684.8	40.0	1791.4	17.9	12.2	
0.2727	0.75	21.3534	1.16	0.5682	1.36	0.80	3321.6	11.8	2900.2	63.4	3154.8	22.3	12.7	
0.1025	1.02	3.3278	3.72	0.2356	3.73	0.96	1669.8	19.0	1363.7	91.0	1487.6	56.5	18.3	
0.1119	1.83	2.7711	2.55	0.1797	2.07	0.71	1830.8	33.1	1065.1	40.4	1347.8	37.4	41.8	
0.1169	1.61	3.0202	2.56	0.1875	2.25	0.79	1909.3	28.9	1107.7	45.6	1412.7	38.4	42.0	
0.1096	1.04	2.6278	1.35	0.1739	1.35	0.67	1793.1	18.9	1033.8	25.7	1308.4	19.6	42.3	
0.1120	1.14	2.7130	1.76	0.1757	1.70	0.78	1832.9	20.6	1043.4	32.6	1332.0	25.7	43.1	
0.1094	1.17	2.5445	1.97	0.1687	1.90	0.82	1789.8	21.4	1005.1	35.2	1284.9	28.4	43.8	
0.1193	1.29	2.8849	2.03	0.1755	1.88	0.78	1945.3	23.1	1042.4	36.0	1378.0	30.1	46.4	
0.1222	1.12	2.9154	1.84	0.1731	1.80	0.81	1988.3	19.9	1029.4	34.1	1385.9	27.5	48.2	
0.1522	1.27	4.1516	2.17	0.1979	2.04	0.82	2371.0	21.6	1164.0	43.3	1664.5	34.8	50.9	
0.4701	2.55	23.7646	7.18	0.3668	6.80	0.94	4150.0	37.8	2014.4	231.0	3258.8	131.2	51.5	
0.1470	1.30	3.7822	1.83	0.1867	1.65	0.72	2311.4	22.4	1103.4	33.4	1589.0	29.0	52.3	
0.4264	4.03	17.4137	7.03	0.2963	5.86	0.82	4004.9	60.3	1673.1	170.3	2957.9	126.8	58.2	
0.1791	1.69	4.6014	2.44	0.1864	2.04	0.73	2644.9	28.1	1101.7	41.3	1749.5	40.0	58.3	

0.2577	5.60	8.1981	6.80	0.2308	4.00	0.57	3232.8	88.3	1338.8	96.0	2253.1	116.2	58.6
0.2524	2.56	7.4309	4.21	0.2136	3.50	0.80	3199.8	40.5	1248.1	79.0	2164.7	72.7	61.0
0.0818	0.90	3.0186	4.13	0.2679	4.16	0.98	1240.0	17.6	1530.0	112.3	1412.3	61.1	-23.4
0.0784	1.15	2.2098	1.63	0.2046	1.55	0.73	1156.5	22.8	1199.8	33.9	1184.2	22.5	-3.7
0.0810	1.56	2.4076	7.69	0.2158	7.60	0.98	1220.6	30.7	1259.5	171.6	1244.9	104.7	-3.2
0.0789	0.81	2.2204	1.57	0.2041	1.70	0.87	1170.7	16.1	1197.2	36.9	1187.5	21.7	-2.3
0.1082	0.73	4.8223	1.21	0.3235	1.42	0.83	1768.7	13.3	1806.8	44.6	1788.8	20.1	-2.2
0.0791	0.80	2.2262	1.21	0.2042	1.38	0.78	1175.2	15.8	1197.6	30.0	1189.3	16.7	-1.9
0.0787	0.93	2.1828	1.82	0.2013	1.87	0.87	1164.4	18.4	1182.1	40.4	1175.6	25.0	-1.5
0.0789	1.19	2.1979	1.73	0.2021	1.63	0.74	1170.3	23.5	1186.4	35.2	1180.4	23.8	-1.4
0.1002	0.73	4.0274	1.03	0.2916	1.27	0.75	1627.9	13.5	1649.6	36.7	1639.7	16.5	-1.3
0.0786	0.75	2.1659	1.19	0.2000	1.39	0.81	1161.3	14.9	1175.4	29.7	1170.2	16.3	-1.2
0.0792	0.96	2.2082	1.51	0.2023	1.56	0.79	1177.0	19.1	1187.7	33.8	1183.6	20.9	-0.9
0.0790	0.86	2.1819	1.31	0.2004	1.43	0.78	1172.1	17.0	1177.5	30.7	1175.3	18.0	-0.5
0.0936	1.02	3.3922	1.56	0.2629	1.58	0.78	1500.3	19.2	1504.8	42.2	1502.6	24.2	-0.3
0.1079	0.89	4.6906	1.27	0.3154	1.38	0.74	1764.2	16.4	1767.4	42.5	1765.6	21.1	-0.2
0.0791	0.97	2.1803	1.50	0.2000	1.54	0.79	1174.3	19.1	1175.5	33.1	1174.8	20.6	-0.1
0.0796	0.90	2.2134	1.30	0.2018	1.40	0.75	1186.8	17.8	1184.9	30.2	1185.3	18.0	0.2
0.0793	1.21	2.1909	1.65	0.2004	1.52	0.70	1179.9	23.9	1177.7	32.7	1178.1	22.7	0.2
0.0791	0.92	2.1730	1.48	0.1993	1.56	0.81	1174.7	18.2	1171.7	33.3	1172.4	20.4	0.3
0.0931	0.79	3.3248	1.29	0.2591	1.45	0.82	1489.9	14.9	1485.4	38.5	1486.9	19.9	0.3
0.0884	1.01	2.8980	1.64	0.2378	1.66	0.81	1391.7	19.3	1375.3	41.1	1381.4	24.5	1.2
0.1209	0.86	5.8527	1.26	0.3514	1.39	0.76	1969.1	15.3	1941.1	46.3	1954.2	21.6	1.4
0.1149	0.91	5.2626	1.37	0.3324	1.46	0.77	1877.9	16.4	1850.1	46.7	1862.8	23.1	1.5
0.0795	0.86	2.1649	1.31	0.1977	1.43	0.78	1184.0	17.1	1162.7	30.4	1169.9	18.1	1.8
0.1121	0.82	4.9813	1.25	0.3223	1.40	0.78	1834.4	14.9	1801.0	43.8	1816.1	20.9	1.8
0.1056	0.84	4.3695	1.23	0.3002	1.37	0.77	1724.8	15.3	1692.5	40.8	1706.6	20.1	1.9
0.1042	0.96	4.2424	1.59	0.2954	1.63	0.81	1700.6	17.8	1668.3	47.8	1682.3	25.7	1.9
0.0786	1.14	2.0953	1.96	0.1934	1.91	0.83	1162.8	22.6	1139.5	39.7	1147.3	26.6	2.0
0.0801	0.73	2.2075	1.20	0.2000	1.40	0.82	1199.4	14.5	1175.2	30.1	1183.4	16.6	2.0
0.0790	0.88	2.1255	1.31	0.1951	1.43	0.77	1173.1	17.3	1149.1	30.0	1157.1	18.0	2.1
0.0775	0.96	2.0098	1.47	0.1881	1.52	0.78	1134.7	19.2	1111.1	30.9	1118.8	19.7	2.1
0.0953	0.89	3.4362	1.51	0.2615	1.61	0.83	1534.8	16.7	1497.6	42.8	1512.7	23.5	2.4

0.0796	0.93	2.1616	1.50	0.1969	1.57	0.81	1188.0	18.3	1158.9	33.2	1168.8	20.6	2.5
0.0795	1.00	2.1475	1.59	0.1960	1.61	0.80	1184.4	19.8	1153.9	34.0	1164.2	21.8	2.6
0.0970	1.19	3.5630	1.64	0.2667	1.53	0.71	1566.3	22.3	1523.8	41.4	1541.3	25.6	2.7
0.0797	0.78	2.1572	1.22	0.1965	1.40	0.80	1188.7	15.3	1156.4	29.6	1167.4	16.8	2.7
0.0793	0.90	2.1266	1.39	0.1946	1.48	0.79	1179.3	17.8	1146.3	31.1	1157.5	19.0	2.8
0.0892	1.12	2.9074	1.58	0.2365	1.52	0.73	1408.6	21.4	1368.4	37.5	1383.8	23.6	2.9
0.0793	1.03	2.1241	1.77	0.1943	1.77	0.83	1179.7	20.3	1144.9	37.1	1156.7	24.1	3.0
0.0802	0.85	2.1917	1.42	0.1983	1.54	0.82	1201.7	16.8	1166.2	32.7	1178.4	19.6	3.0
0.0807	0.85	2.2266	1.25	0.2003	1.39	0.76	1213.2	16.8	1176.9	29.8	1189.5	17.4	3.0
0.0803	0.75	2.1893	1.13	0.1978	1.35	0.79	1204.3	14.7	1163.7	28.6	1177.7	15.7	3.4
0.0923	0.75	3.1239	1.09	0.2456	1.30	0.76	1473.3	14.3	1415.8	33.0	1438.6	16.6	3.9
0.0806	1.10	2.1891	1.74	0.1971	1.70	0.79	1211.8	21.7	1159.5	36.0	1177.6	23.9	4.3
0.0808	1.08	2.2037	1.56	0.1979	1.54	0.75	1216.5	21.1	1164.0	32.7	1182.2	21.6	4.3
0.0794	1.18	2.0974	1.79	0.1916	1.70	0.77	1183.0	23.4	1130.0	35.2	1148.0	24.4	4.5
0.0804	0.96	2.1673	1.58	0.1956	1.63	0.81	1206.8	18.9	1151.6	34.4	1170.6	21.8	4.6
0.0807	1.05	2.1897	1.55	0.1968	1.55	0.76	1214.7	20.6	1158.3	32.7	1177.8	21.4	4.6
0.0801	0.70	2.1413	1.14	0.1940	1.38	0.83	1199.0	13.8	1143.1	28.8	1162.2	15.7	4.7
0.0790	0.97	2.0586	1.89	0.1891	1.93	0.87	1171.6	19.2	1116.7	39.4	1135.2	25.5	4.7
0.0791	0.83	2.0546	1.30	0.1886	1.44	0.80	1173.7	16.4	1113.6	29.5	1133.8	17.6	5.1
0.0808	0.85	2.1810	1.31	0.1959	1.43	0.79	1215.9	16.7	1153.4	30.2	1175.0	18.0	5.1
0.1117	0.89	4.7264	1.13	0.3070	1.25	0.66	1827.1	16.1	1726.2	37.8	1771.9	18.7	5.5
0.0816	0.89	2.2319	1.64	0.1984	1.73	0.86	1236.5	17.4	1166.8	36.8	1191.1	22.8	5.6
0.0810	1.05	2.1817	1.53	0.1955	1.52	0.75	1221.1	20.7	1150.9	32.0	1175.2	21.1	5.8
0.1111	1.47	4.6391	1.92	0.3031	1.61	0.66	1816.8	26.8	1706.6	48.2	1756.3	31.6	6.1
0.0805	1.06	2.1269	1.61	0.1918	1.60	0.77	1208.0	20.8	1131.3	33.1	1157.6	22.0	6.4
0.1090	0.94	4.3999	1.58	0.2929	1.64	0.82	1783.0	17.1	1655.8	47.7	1712.3	25.7	7.1
0.0824	0.93	2.2416	1.65	0.1973	1.72	0.84	1255.7	18.2	1160.9	36.4	1194.2	23.0	7.5
0.0931	0.92	3.0497	1.22	0.2378	1.31	0.69	1489.2	17.4	1375.1	32.4	1420.2	18.4	7.7
0.1018	0.87	3.6979	1.37	0.2636	1.48	0.80	1657.4	16.1	1508.0	39.8	1570.9	21.7	9.0
0.0819	0.91	2.1345	1.30	0.1891	1.39	0.74	1243.4	17.8	1116.4	28.5	1160.1	17.8	10.2
0.1223	1.24	5.2481	1.89	0.3114	1.77	0.77	1989.9	22.1	1747.6	53.8	1860.5	31.8	12.2
0.0841	1.37	2.2123	1.67	0.1910	1.41	0.59	1294.0	26.6	1126.5	29.1	1184.9	23.1	12.9
0.0816	0.80	1.9828	1.13	0.1762	1.31	0.75	1236.8	15.6	1046.4	25.2	1109.7	15.1	15.4
0.0798	0.98	1.7877	2.65	0.1625	2.67	0.93	1192.9	19.4	970.5	48.0	1041.0	34.0	18.6

0.0968	1.18	2.5639	3.07	0.1921	3.01	0.93	1564.2	22.2	1132.7	62.3	1290.4	43.8	27.6
0.0775	0.83	1.4317	1.34	0.1341	1.47	0.81	1133.9	16.6	810.9	22.4	902.2	15.9	28.5
0.1530	5.02	5.9451	5.53	0.2820	2.53	0.42	2379.6	85.6	1601.2	71.3	1967.9	91.8	32.7
0.0700	0.79	0.8265	1.27	0.0857	1.44	0.81	928.4	16.2	529.9	14.6	611.7	11.6	42.9

Data supplement 9: U-Pb concordias of r
eference materials for chapter 5.



Data supplement 10 : Detrital zircon U-Pb data for chapter 5.

Sample	^{204}Pb	^{206}Pb	^{207}Pb	^{238}U	Pbppm	Uppm	$^{238}U/^{206}Pb$	1s %	$^{207}Pb/^{206}Pb$	1s %	$^{207}Pb/^{235}U$	1s %	$^{206}Pb/^{238}U$	1s %
CS11-1_1	-81	2.2	0.14	15	27	149	5.35	1.02	0.0754	**0.42**	1.9423	1.10	0.1869	1.02
CS11-1_2	-280	2.4	0.15	16	29	158	5.25	1.32	0.0750	**0.40**	1.9676	1.38	0.1904	1.32
CS11-1_3	-32	0.8	0.05	6	10	58	5.87	1.53	0.0709	0.80	1.6640	1.73	0.1703	1.53
CS11-1_4	-78	0.6	0.03	4	7	42	5.94	1.37	0.0702	0.62	1.6279	1.51	0.1683	1.37
CS11-1_5	135	1.1	0.07	8	13	77	5.73	**0.64**	0.0727	1.34	1.7509	1.49	0.1746	**0.64**
CS11-1_6	-36	1.0	0.06	7	12	67	5.44	1.20	0.0751	0.72	1.9034	1.40	0.1838	1.20
CS11-1_7	116	2.4	0.16	16	30	161	5.21	1.51	0.0750	**0.49**	1.9860	1.59	0.1920	1.51
CS11-1_8	**-390**	1.1	0.09	6	14	55	3.79	2.05	0.0930	0.69	3.3821	2.16	0.2638	2.05
CS11-1_9	**307**	1.5	0.10	12	19	121	6.16	1.11	0.0731	**0.43**	1.6356	1.20	0.1623	1.11
CS11-1_10	-61	2.5	0.20	12	30	118	3.77	**0.72**	0.0938	**0.49**	3.4329	0.88	0.2655	**0.72**
CS11-1_11	20	0.5	0.03	4	6	41	6.14	1.05	0.0723	0.75	1.6219	1.29	0.1627	1.05
CS11-1_12	289	2.8	0.23	14	35	134	3.77	1.51	0.0933	**0.35**	3.4125	1.55	0.2653	1.51
CS11-1_13	-26	0.4	0.02	**3**	4	26	5.73	1.38	0.0731	1.16	1.7574	1.80	0.1745	1.38
CS11-1_14	**335**	1.9	0.12	13	23	129	5.40	1.25	0.0755	**0.46**	1.9273	1.33	0.1851	1.25
CS11-1_15	47	0.3	0.02	**2**	4	23	5.84	1.06	0.0726	1.05	1.7147	1.49	0.1713	1.06
CS11-1_16	128	1.7	0.15	8	21	77	3.57	1.22	0.1015	0.57	3.9161	1.35	0.2799	1.22
CS11-1_17	-130	0.8	0.07	4	10	40	3.81	1.57	0.0948	**0.48**	3.4299	1.64	0.2623	1.57
CS11-1_18	-77	0.4	0.03	**3**	5	32	5.95	1.55	0.0747	0.85	1.7319	1.77	0.1681	1.55
CS11-1_19	-194	2.7	0.22	13	34	130	3.77	1.51	0.0931	**0.35**	3.4077	1.55	0.2655	1.51
CS11-1_20	0	0.2	0.01	**2**	3	17	6.19	1.61	0.0742	1.50	1.6515	2.21	0.1614	1.61
CS11-1_21	133	0.5	0.04	**4**	7	37	5.56	1.56	0.0750	1.36	1.8615	2.07	0.1799	1.56
CS11-1_22	226	3.1	0.25	15	38	147	3.79	1.18	0.0933	**0.39**	3.3977	1.24	0.2641	1.18
CS11-1_23	12	0.1	**0.01**	**1**	2	11	6.16	1.79	0.0698	1.60	1.5629	2.40	0.1623	1.79
CS11-1_24	-16	3.0	0.24	14	37	140	3.69	1.70	0.0934	0.52	3.4914	1.78	0.2712	1.70
CS11-1_25	-107	0.9	0.06	7	11	67	5.67	1.19	0.0755	0.97	1.8359	1.54	0.1764	1.19
CS11-1_26	80	0.4	0.02	**3**	4	25	5.61	2.64	0.0738	0.79	1.8146	2.75	0.1784	2.64
CS11-1_27	39	0.3	0.02	**2**	4	25	6.14	2.34	0.0723	0.51	1.6233	2.39	0.1629	2.34
CS11-1_28	**-355**	1.1	0.08	7	13	64	4.68	1.55	0.0818	**0.34**	2.4097	1.59	0.2136	1.55
CS11-1_29	104	0.3	0.02	**3**	4	28	6.22	1.43	0.0722	1.54	1.6010	2.11	0.1609	1.43
CS11-1_30	-142	0.2	0.01	**2**	3	17	6.25	1.69	0.0709	0.76	1.5637	1.85	0.1599	1.69
CS11-1_31	35	0.1	**0.01**	**1**	2	10	6.15	1.11	0.0732	2.34	1.6410	2.59	0.1626	1.11
CS11-1_32	-103	0.7	0.04	5	8	49	5.91	1.42	0.0744	**0.38**	1.7359	1.47	0.1692	1.42

CS11-1_33	12	1.6	0.13	8	20	80	3.85	2.47	0.0936	0.51	3.3530	2.52	0.2597	2.47
CS11-1_34	48	3.5	0.25	21	43	209	4.66	1.87	0.0827	**0.30**	2.4463	1.89	0.2144	1.87
CS11-1_35	-69	0.1	**0.01**	**1**	2	9	4.98	1.65	0.0813	1.86	2.2507	2.49	0.2009	1.65
CS11-1_36	82	5.3	0.45	31	65	301	4.41	3.13	0.0981	0.63	3.0668	3.20	0.2268	3.13
CS11-1_37	-28	0.7	0.06	**4**	9	35	3.91	2.70	0.0937	0.68	3.3042	2.78	0.2556	2.70
CS11-1_38	267	2.5	0.20	13	31	125	3.92	1.96	0.0937	**0.41**	3.2988	2.00	0.2554	1.96
CS11-1_39	191	1.2	0.08	10	15	95	6.13	1.78	0.0722	**0.50**	1.6238	1.85	0.1631	1.78
CS11-1_40	30	1.4	0.10	11	17	113	6.58	1.65	0.0833	1.23	1.7464	2.05	0.1521	1.65
CS11-1_41	72	0.3	0.02	**2**	3	20	5.68	1.14	0.0722	1.27	1.7512	1.71	0.1759	1.14
CS11-1_42	-266	0.3	0.02	**2**	3	21	6.16	1.73	0.0715	1.04	1.6007	2.01	0.1624	1.73
CS11-1_43	5	0.3	0.02	**2**	3	20	5.98	1.68	0.0706	1.33	1.6276	2.14	0.1673	1.68
CS11-1_44	27	1.1	0.07	8	13	82	5.94	1.61	0.0709	0.73	1.6475	1.77	0.1684	1.61
CS11-1_45	123	0.1	**0.01**	**1**	1	9	6.09	2.13	0.0701	1.59	1.5867	2.66	0.1642	2.13
CS11-1_46	92	2.3	0.14	17	28	171	5.81	1.40	0.0720	0.76	1.7078	1.59	0.1721	1.40
CS11-1_47	-208	0.1	**0.01**	**1**	1	6	5.25	3.04	0.0761	1.73	2.0011	3.50	0.1906	3.04
CS11-1_48	233	3.5	0.28	17	43	165	3.74	1.57	0.0929	**0.35**	3.4220	1.61	0.2672	1.57
CS11-1_49	-70	0.1	**0.01**	**1**	1	9	6.15	1.17	0.0769	2.74	1.7222	2.98	0.1625	1.17
CS11-1_50	-112	0.1	**0.00**	**0**	1	5	6.16	1.42	0.0661	2.43	1.4795	2.82	0.1622	1.42
CS11-1_51	-25	0.1	**0.01**	**1**	1	9	6.25	1.44	0.0697	1.40	1.5373	2.01	0.1600	1.44
CS11-1_52	-46	1.7	0.14	9	21	86	3.88	1.05	0.0936	**0.37**	3.3236	1.12	0.2576	1.05
CS11-1_53	79	0.7	0.05	5	9	49	5.45	1.37	0.0735	0.50	1.8581	1.46	0.1833	1.37
CS11-1_54	47	0.2	0.01	**2**	3	16	5.65	1.36	0.0744	0.96	1.8147	1.67	0.1769	1.36
CS11-1_55	72	1.1	0.08	5	13	51	3.80	**0.62**	0.0929	0.52	3.3726	0.80	0.2634	**0.62**
CS11-1_56	-201	1.9	0.13	13	24	131	5.35	1.29	0.0754	**0.36**	1.9415	1.34	0.1868	1.29
CS11-1_57	-184	0.1	**0.01**	**1**	2	11	6.04	1.57	0.0721	1.96	1.6447	2.51	0.1655	1.57
CS11-1_58	-32	1.1	0.07	8	14	77	5.46	1.64	0.0751	0.56	1.8975	1.73	0.1833	1.64
CS11-1_60	-172	1.5	0.10	10	18	101	5.37	1.51	0.0750	**0.46**	1.9277	1.57	0.1864	1.51
CS11-1_62	-165	0.4	0.03	**2**	5	23	4.80	1.78	0.0810	1.14	2.3244	2.11	0.2082	1.78
CS11-1_63	12	1.1	0.07	8	14	77	5.41	0.98	0.0748	**0.50**	1.9074	1.10	0.1849	0.98
CS11-1_64	125	4.2	0.34	20	52	196	3.62	1.13	0.0933	**0.39**	3.5502	1.19	0.2761	1.13
CS11-1_65	207	0.6	0.04	5	8	45	5.51	1.60	0.0760	0.63	1.9028	1.72	0.1816	1.60
CS11-1_66	**-409**	1.9	0.16	10	23	94	3.88	1.63	0.0948	**0.43**	3.3720	1.69	0.2579	1.63

CS11-1_67	**-306**	0.4	0.03	**3**	5	29	5.59	1.68	0.0731	1.11	1.8031	2.01	0.1789	1.68
CS11-1_68	124	0.6	0.04	4	7	41	5.47	1.64	0.0768	0.81	1.9358	1.83	0.1828	1.64
CS11-1_69	129	0.8	0.05	6	10	55	5.46	1.69	0.0753	0.71	1.9023	1.84	0.1833	1.69
CS11-1_70	-161	1.2	0.10	6	15	63	4.01	2.01	0.0948	**0.48**	3.2619	2.06	0.2496	2.01
CS11-1_70	-161	1.2	0.10	6	15	63	4.01	2.01	0.0948	**0.48**	3.2616	2.06	0.2496	2.01
CS11-1_71	-141	0.1	**0.01**	**1**	1	7	6.12	2.08	0.0716	3.78	1.6133	4.31	0.1633	2.08
CS11-1_72	64	0.5	0.03	4	6	39	6.08	1.52	0.0698	0.76	1.5836	1.70	0.1645	1.52
CS11-1_73	61	3.4	0.27	16	42	158	3.67	1.65	0.0938	**0.33**	3.5230	1.69	0.2725	1.65
CS11-1_74	-109	2.3	0.19	11	28	107	3.71	1.34	0.0961	**0.49**	3.5751	1.42	0.2698	1.34
CS11-1_75	-129	1.0	0.06	7	12	67	5.48	1.15	0.0751	0.52	1.8891	1.27	0.1825	1.15
CS11-1_76	105	0.1	**0.01**	**1**	2	11	6.24	0.88	0.0708	2.56	1.5652	2.70	0.1604	0.88
CS11-1_77	103	0.6	0.05	**3**	8	32	4.01	1.45	0.0935	**0.50**	3.2188	1.53	0.2497	1.45
CS11-1_78	95	0.7	0.05	5	9	49	5.30	1.28	0.0764	0.84	1.9875	1.53	0.1886	1.28
CS11-1_78	95	0.7	0.05	5	9	49	5.30	1.28	0.0764	0.84	1.9874	1.53	0.1885	1.28
CS11-1_79	-165	0.4	0.02	**3**	4	27	6.05	1.64	0.0726	1.40	1.6550	2.15	0.1653	1.64
CS11-1_80	-46	0.6	0.04	4	7	41	5.51	1.71	0.0754	0.77	1.8872	1.88	0.1815	1.71
CS11-1_81	232	1.1	0.10	5	14	50	3.48	1.08	0.0997	0.52	3.9490	1.20	0.2873	1.08
CS11-1_82	48	3.7	0.24	24	45	238	5.16	1.34	0.0766	**0.42**	2.0483	1.41	0.1939	1.34
CS11-1_83	**374**	1.4	0.11	7	17	69	3.86	1.70	0.0928	**0.28**	3.3164	1.72	0.2592	1.70
CS11-1_84	239	0.6	0.04	5	8	47	5.98	1.26	0.0714	0.54	1.6443	1.37	0.1671	1.26
CS11-1_85	-52	0.1	**0.01**	**1**	2	11	6.24	2.43	0.0684	2.06	1.5116	3.19	0.1603	2.43
CS11-1_86	38	0.2	0.01	**2**	3	16	6.17	1.48	0.0685	1.48	1.5318	2.10	0.1621	1.48
CS11-1_87	38	1.1	0.07	8	13	79	5.54	2.22	0.0740	0.66	1.8412	2.31	0.1805	2.22
CS11-1_89	-53	1.0	0.06	8	12	75	6.16	1.79	0.0710	0.98	1.5895	2.04	0.1623	1.79
CS11-1_90	22	0.5	0.04	**4**	7	38	5.55	1.72	0.0768	0.54	1.9084	1.81	0.1803	1.72
CS11-1_91	233	0.6	0.04	**4**	7	39	5.54	1.50	0.0736	**0.42**	1.8332	1.56	0.1806	1.50
CS11-1_92	-38	0.2	0.01	**2**	3	20	6.27	1.57	0.0688	1.30	1.5138	2.04	0.1596	1.57
CS11-1_93	**402**	1.1	0.08	7	14	69	4.80	2.07	0.0817	0.63	2.3446	2.16	0.2081	2.07
CS11-1_94	-106	0.6	0.04	4	7	43	5.64	2.20	0.0742	**0.50**	1.8131	2.26	0.1772	2.20
CS11-1_95	288	0.3	0.02	**2**	4	24	6.22	1.43	0.0709	1.16	1.5716	1.84	0.1608	1.43
CS11-1_96	33	0.2	0.01	**2**	3	17	6.20	1.37	0.0686	1.28	1.5257	1.87	0.1613	1.37
CS11-1_97	-163	2.0	0.13	15	25	149	5.74	1.95	0.0744	0.61	1.7864	2.05	0.1742	1.95

CS11-1_98	117	2.3	0.19	11	28	112	3.83	1.80	0.0935	**0.47**	3.3641	1.86	0.2609	1.80
CS11-1_99	-59	2.7	0.18	19	33	186	5.45	1.85	0.0761	**0.47**	1.9259	1.91	0.1836	1.85
CS11-1_99	24	0.5	0.03	**3**	6	29	4.88	1.32	0.0816	0.57	2.3046	1.44	0.2049	1.32
CS11-1_100	237	2.9	0.24	15	35	144	3.93	1.38	0.0944	**0.47**	3.3121	1.45	0.2546	1.38
CS11-3_1	172.7	0.465	0.029	**3.863**	7	44	6.27	1.25794	0.0720	0.91	1.5826	1.5528	0.1595	1.2579
CS11-3_2	-57.83	0.038	**0.002**	**0.284**	1	3	5.42	5.4226	0.0673	6.55	1.7106	8.5003	0.1844	5.4226
CS11-3_3	5.445	1.934	0.156	9.848	30	113	3.78	1.17581	0.0935	0.53	3.4117	1.2909	0.2646	1.1758
CS11-3_4	145.1	1.373	0.097	8.683	21	100	4.74	1.85238	0.0820	0.56	2.3832	1.9349	0.2108	1.8524
CS11-3_5	-172.5	0.843	0.052	6.828	13	79	6.09	1.70778	0.0719	1.29	1.6278	2.1405	0.1642	1.7078
CS11-3_6	67.79	0.526	0.032	4.347	8	50	6.24	1.37679	0.0709	1.00	1.5664	1.7044	0.1602	1.3768
CS11-3_7	-25.18	0.185	0.012	**1.349**	3	16	5.48	2.14097	0.0753	0.60	1.8940	2.2232	0.1824	2.141
CS11-3_8	-281.2	3.293	0.267	16.61	51	191	3.82	1.45625	0.0939	**0.40**	3.3858	1.5095	0.2616	1.4563
CS11-3_9	**-343.8**	0.579	0.039	4.271	9	49	5.57	1.22989	0.0770	0.55	1.9048	1.3486	0.1795	1.2299
CS11-3_10	-116.1	0.114	**0.007**	**0.951**	2	11	6.32	1.01591	0.0677	1.79	1.4764	2.0592	0.1583	1.0159
CS11-3_11	-43.77	0.369	0.024	**2.755**	6	32	5.61	1.74324	0.0764	0.81	1.8762	1.923	0.1781	1.7432
CS11-3_15	-12.33	0.051	**0.003**	**0.43**	1	5	6.22	3.48463	0.0688	5.38	1.5248	6.4139	0.1608	3.4846
CS11-3_16	149.6	0.638	0.043	4.691	10	54	5.52	1.3281	0.0758	0.51	1.8949	1.4239	0.1812	1.3281
CS11-3_17	**383.1**	1.129	0.1	5.445	18	63	3.57	1.46725	0.1008	0.65	3.8935	1.603	0.2801	1.4672
CS11-3_18	-159.7	0.232	0.014	**1.945**	4	22	6.33	1.1442	0.0711	0.96	1.5477	1.4946	0.1579	1.1442
CS11-3_19	77.56	0.918	0.081	4.263	14	49	3.50	0.81225	0.1020	0.52	4.0131	0.9621	0.2853	0.8123
CS11-3_20	276.7	2.28	0.161	14.06	36	162	4.61	1.61793	0.0817	**0.46**	2.4417	1.6833	0.2167	1.6179
CS11-3_21	287	0.158	**0.01**	**1.325**	2	15	6.20	0.93474	0.0710	1.13	1.5802	1.4639	0.1614	0.9347
CS11-3_22	84.06	0.347	0.022	**2.898**	5	33	6.21	1.92867	0.0721	1.82	1.5991	2.6528	0.1609	1.9287
CS11-3_23	8.997	0.472	0.035	**2.991**	7	34	4.74	1.75738	0.0850	1.02	2.4723	2.0315	0.2109	1.7574
CS11-3_24	232.1	1.145	0.101	5.278	18	61	3.45	1.62554	0.1025	**0.32**	4.0925	1.6574	0.2897	1.6255
CS11-3_25	-27.01	1.954	0.172	8.903	30	102	3.40	1.73591	0.1019	**0.46**	4.1358	1.7951	0.2943	1.7359
CS11-3_26	167.7	0.643	0.039	5.172	10	60	6.13	1.35169	0.0724	0.67	1.6281	1.5088	0.1632	1.3517
CS11-3_27	5.289	0.711	0.047	5.225	11	60	5.51	2.03997	0.0769	0.57	1.9248	2.1169	0.1816	2.04
CS11-3_28	21.55	0.919	0.062	7.187	14	83	5.69	1.99387	0.0769	0.73	1.8632	2.1244	0.1758	1.9939
CS11-3_29	193.6	2.738	0.243	12.44	43	143	3.36	1.81956	0.1026	**0.41**	4.2028	1.8646	0.2972	1.8196
CS11-3_.30	**389**	1.235	0.101	6.351	19	73	3.82	1.83848	0.0949	**0.39**	3.4203	1.8787	0.2615	1.8385
CS11-3_31	273.8	1.551	0.137	7.215	24	83	3.47	1.73777	0.1018	**0.34**	4.0449	1.7701	0.2882	1.7378

CS11-3_32	**381.8**	0.152	**0.009**	**1.267**	2	15	6.21	1.86583	0.0719	1.06	1.5966	2.1454	0.1610	1.8658
CS11-3_33	202.3	0.868	0.057	6.493	14	75	5.61	1.57425	0.0765	0.59	1.8804	1.6816	0.1782	1.5742
CS11-3_34	**-301.9**	0.954	0.059	7.92	15	91	6.17	1.54698	0.0717	0.51	1.6010	1.6294	0.1619	1.547
CS11-3_35	**-343.2**	0.363	0.032	**1.645**	6	19	3.44	2.1017	0.1014	0.99	4.0618	2.3227	0.2906	2.1017
CS11-3_36	104.3	1.605	0.108	11.51	25	132	5.33	1.49532	0.0779	0.59	2.0164	1.609	0.1877	1.4953
CS11-3_37	224.2	4.795	0.422	21.79	75	251	3.36	1.68077	0.1016	**0.30**	4.1736	1.7075	0.2980	1.6808
CS11-3_38	-197.5	0.066	**0.004**	**0.558**	1	6	6.22	3.17599	0.0674	2.53	1.4930	4.0635	0.1607	3.176
CS11-3_39	-96.33	5.839	0.475	29.5	91	340	3.68	0.88969	0.0942	**0.32**	3.5259	0.9459	0.2715	0.8897
CS11-3_40	-203.1	0.244	0.015	**2.006**	4	23	6.22	1.99393	0.0703	1.19	1.5565	2.3239	0.1607	1.9939
CS11-3_41	-76.97	0.282	0.017	**2.433**	4	28	6.41	1.02969	0.0706	0.76	1.5200	1.2823	0.1561	1.0297
CS11-3_42	200.1	1.015	0.063	8.324	16	96	6.16	1.35892	0.0729	0.63	1.6311	1.4971	0.1623	1.3589
CS11-3_43	-87.14	0.136	**0.008**	**1.186**	2	14	6.42	2.12194	0.0696	1.74	1.4951	2.7448	0.1557	2.1219
CS11-3_44	7.128	1.07	0.071	7.864	17	91	5.44	1.36324	0.0770	0.62	1.9519	1.4992	0.1839	1.3632
CS11-3_45	17.65	0.754	0.049	5.643	12	65	5.56	1.66968	0.0750	0.68	1.8603	1.801	0.1800	1.6697
CS11-3_46	-96.63	0.606	0.039	4.605	9	53	5.65	1.92193	0.0752	0.90	1.8362	2.1222	0.1771	1.9219
CS11-3_47	-98.86	0.283	0.019	**2.034**	4	23	5.34	2.08547	0.0760	1.34	1.9615	2.4786	0.1872	2.0855
CS11-3_48	83.85	0.222	0.014	**1.681**	3	19	5.68	1.76512	0.0742	2.04	1.7987	2.6961	0.1759	1.7651
CS11-3_49	-127.5	2.728	0.181	20.13	43	232	5.49	1.37503	0.0769	**0.33**	1.9333	1.4149	0.1823	1.375
CS11-3_50	144.2	0.051	**0.004**	**0.413**	1	5	5.93	4.98415	0.0853	4.81	1.9833	6.9274	0.1686	4.9841
CS11-3_51	191.5	1.133	0.075	8.254	18	95	5.40	1.73171	0.0767	**0.48**	1.9584	1.7957	0.1851	1.7317
CS11-3_52	-172.5	0.715	0.063	**3.348**	11	39	3.48	2.19583	0.1011	0.55	4.0049	2.2646	0.2872	2.1958
CS11-3_53	-146.9	0.925	0.081	4.247	14	49	3.46	1.49204	0.1017	0.84	4.0518	1.7142	0.2888	1.492
CS11-3_54	158.9	0.499	0.04	**2.621**	8	30	3.88	0.85836	0.0932	1.21	3.3157	1.4808	0.2581	0.8584
CS11-3_55	52.83	1.332	0.087	9.731	21	112	5.38	1.13512	0.0757	**0.46**	1.9397	1.2238	0.1857	1.1351
CS11-3_56	219.2	1.702	0.121	10.85	27	125	4.68	1.21969	0.0825	0.77	2.4333	1.4419	0.2139	1.2197
CS11-3_57	-202.2	0.319	0.021	**2.358**	5	27	5.44	1.09335	0.0751	1.04	1.9023	1.5106	0.1837	1.0934
CS11-3_58	-119.2	1.908	0.126	13.85	30	159	5.24	1.26233	0.0765	**0.47**	2.0106	1.3453	0.1907	1.2623
CS11-3_59	-5.913	0.295	0.02	**2.617**	5	30	6.67	1.47143	0.0770	0.97	1.5913	1.7612	0.1499	1.4714
CS11-3_60	30.41	0.286	0.019	**2.119**	4	24	5.47	1.53402	0.0770	1.45	1.9427	2.1107	0.1829	1.534
CS11-3_61	-237.8	1.416	0.116	7.217	22	83	3.77	1.17234	0.0947	**0.47**	3.4650	1.2641	0.2654	1.1723
CS11-3_62	-3.318	0.264	0.017	**2.181**	4	25	6.07	1.27828	0.0743	0.83	1.6872	1.5257	0.1648	1.2783
CS11-3_63	**321.7**	1.134	0.093	5.864	18	68	3.82	1.07488	0.0948	0.58	3.4192	1.2232	0.2616	1.0749

CS11-3_64	101	1.641	0.144	8.044	26	93	3.61	1.70015	0.1018	**0.50**	3.8864	1.772	0.2769	1.7002
CS11-3_65	250.2	0.048	**0.003**	**0.402**	1	5	6.29	0.94882	0.0713	2.96	1.5626	3.105	0.1590	0.9488
CS11-3_67	12.95	1.018	0.063	8.51	16	98	6.12	1.41147	0.0719	0.69	1.6193	1.5698	0.1634	1.4115
CS11-3_68	55.64	0.284	0.019	**2.131**	4	25	5.58	1.00993	0.0770	0.84	1.9021	1.3155	0.1791	1.0099
CS11-3_69	181.1	5.058	0.418	25.05	79	288	3.62	2.13927	0.0956	**0.35**	3.6389	2.1684	0.2761	2.1393
CS11-3_70	-39.87	0.113	**0.007**	**0.953**	2	11	6.29	1.07317	0.0715	1.41	1.5677	1.7701	0.1591	1.0732
CS11-3_71	**-385.2**	0.309	0.02	**2.614**	5	30	6.30	0.76205	0.0732	1.27	1.6033	1.4794	0.1588	0.7621
CS11-3_72	120.4	0.138	**0.008**	**1.174**	2	14	6.35	0.95744	0.0700	1.45	1.5212	1.7372	0.1575	0.9574
CS11-3_73	120.4	0.138	**0.008**	**1.174**	2	14	6.35	0.95736	0.0700	1.45	1.5213	1.7372	0.1575	0.9574
CS11-3_74	59.3	0.909	0.06	6.596	14	76	5.33	1.76234	0.0763	0.68	1.9739	1.8878	0.1876	1.7623
CS11-3_75	-264	4.124	0.257	33.4	64	384	6.02	1.50846	0.0722	**0.46**	1.6533	1.5775	0.1661	1.5085
CS11-3_76	77.45	1.371	0.121	6.463	21	74	3.45	2.4878	0.1019	**0.39**	4.0709	2.5188	0.2896	2.4878
CS11-18_1	34.27	0.642	0.042	5.245	10	60	5.76	1.50026	0.0760	0.73	1.8209	1.6676	0.1737	1.5003
CS11-18_2	63.94	3.24	0.302	14.76	51	170	3.20	1.25137	0.1078	**0.47**	4.6464	1.337	0.3127	1.2514
CS11-18_3	113.9	1.079	0.103	4.817	17	55	3.20	1.44309	0.1102	0.64	4.7510	1.5788	0.3126	1.4431
CS11-18_4	-16.29	4.51	0.715	12.71	70	146	1.97	2.96276	0.1834	**0.30**	12.8088	2.9784	0.5066	2.9628
CS11-18_5	135.7	1.973	0.187	8.997	31	104	3.19	2.20104	0.1096	**0.49**	4.7408	2.2546	0.3138	2.201
CS11-18_6	**520.1**	8.062	0.76	40.91	126	471	3.51	2.45854	0.1093	**0.28**	4.2954	2.4741	0.2850	2.4585
CS11-18_7	44.24	6.509	0.632	27.14	102	312	2.97	1.22382	0.1125	**0.42**	5.2132	1.294	0.3361	1.2238
CS11-18_8	-1.019	1.262	0.129	5.238	20	60	2.98	2.71818	0.1181	**0.43**	5.4552	2.7527	0.3350	2.7182
CS11-18_9	153.6	1.695	0.164	7.592	26	87	3.13	0.78803	0.1107	**0.47**	4.8809	0.9173	0.3198	0.788
CS11-18_10	-49.49	7.061	0.683	30.18	110	347	3.07	2.18004	0.1118	**0.34**	5.0247	2.2057	0.3260	2.18
CS11-18_11	-134.8	2.925	0.279	13.1	46	151	3.12	2.05957	0.1102	**0.43**	4.8742	2.1047	0.3208	2.0596
CS11-18_12	44.21	4.297	0.41	18.95	67	218	3.07	2.73772	0.1104	**0.35**	4.9534	2.76	0.3253	2.7377
CS11-18_13	173.4	4.564	0.436	19.97	71	230	3.04	1.61496	0.1106	**0.32**	5.0121	1.6463	0.3288	1.615
CS11-18_14	**555.8**	5.472	0.886	15.21	85	175	1.94	2.33182	0.1874	**0.35**	13.3100	2.3586	0.5151	2.3318
CS11-18_15	103.6	1.688	0.267	4.948	26	57	2.05	1.74496	0.1836	**0.31**	12.3541	1.7719	0.4879	1.745
CS11-18_16	105.9	2.017	0.195	9.136	31	105	3.15	2.68213	0.1116	**0.33**	4.8815	2.7023	0.3171	2.6821
CS11-18_17	-97.46	2.319	0.22	10.32	36	119	3.15	1.38933	0.1095	**0.46**	4.7958	1.4628	0.3175	1.3893
CS11-18_18	-60.58	7.494	0.721	32.15	117	370	3.00	1.86073	0.1114	**0.33**	5.1238	1.8898	0.3337	1.8607
CS11-18_19	78.32	1.276	0.124	6.077	20	70	3.30	1.51911	0.1112	0.74	4.6545	1.688	0.3035	1.5191
CS11-18_20	-84.8	4.372	0.418	19.35	68	223	3.06	0.95237	0.1107	**0.36**	4.9967	1.0166	0.3273	0.9524

CS11-18_21	-206.6	7.458	0.718	32.77	116	377	3.06	1.38108	0.1114	**0.32**	5.0173	1.4173	0.3267	1.3811
CS11-18_22	298.1	5.811	0.546	27.29	91	314	3.28	1.51175	0.1088	**0.48**	4.5730	1.5872	0.3050	1.5117
CS11-18_23	**-428.9**	4.783	0.766	13.39	75	154	1.95	1.23165	0.1852	**0.35**	13.1044	1.2811	0.5132	1.2317
CS11-18_24	10.05	4.882	0.468	22	76	253	3.14	1.01077	0.1112	**0.31**	4.8798	1.0582	0.3182	1.0108
CS11-18_25	**-373.8**	13.16	1.229	73.39	205	845	3.86	1.93483	0.1081	**0.31**	3.8572	1.9597	0.2588	1.9348
CS11-18_26	**-345.9**	1.706	0.162	7.933	27	91	3.16	1.36404	0.1104	**0.33**	4.8097	1.4023	0.3161	1.364
CS11-18_27	-59.35	5.941	0.908	18.02	93	207	2.11	1.54519	0.1769	**0.31**	11.5472	1.5751	0.4734	1.5452
CS11-18_28	-34.27	12.17	1.154	65.26	190	751	3.73	1.12467	0.1098	**0.35**	4.0547	1.1781	0.2678	1.1247
CS11-18_29	-246.2	1.086	0.103	5.034	17	58	3.23	1.19778	0.1097	0.65	4.6884	1.3635	0.3100	1.1978
CS11-18_30	-139.6	0.327	0.031	**1.521**	5	18	3.27	**0.72679**	0.1097	0.58	4.6221	0.9278	0.3056	**0.7268**
CS11-18_32	-236.1	1.969	0.188	8.675	31	100	3.07	1.62878	0.1108	**0.40**	4.9783	1.6762	0.3260	1.6288
CS11-18_33	-86.56	0.416	0.038	**2.004**	6	23	3.36	1.01307	0.1055	0.60	4.3281	1.1795	0.2976	1.0131
CS11-18_34	-213	7.266	0.691	35.28	113	406	3.36	2.41822	0.1098	**0.28**	4.5098	2.4349	0.2980	2.4182
CS11-18_35	-290.6	2.733	0.256	12.28	43	141	3.13	1.38079	0.1085	**0.33**	4.7776	1.4192	0.3195	1.3808
CS11-18_36	-141.8	3.488	0.539	9.957	54	115	1.99	1.61161	0.1792	**0.31**	12.4418	1.6412	0.5036	1.6116
CS11-18_37	-221.5	4.259	0.395	19.32	66	222	3.16	1.6151	0.1073	**0.27**	4.6821	1.6375	0.3164	1.6151
CS11-18_38	-119.5	7.908	1.27	22.54	123	260	1.98	1.21164	0.1860	**0.33**	12.9572	1.2557	0.5052	1.2116
CS11-18_39	27.6	7.374	1.177	20.53	115	236	1.93	1.49184	0.1844	**0.38**	13.1550	1.5387	0.5173	1.4918
CS11-18_40	**-450.2**	3.301	0.313	14.42	52	166	3.04	1.09738	0.1097	**0.33**	4.9845	1.1448	0.3294	1.0974
CS11-18_41	-40.92	4.663	0.638	14.5	73	167	2.20	1.08151	0.1582	**0.36**	9.9282	1.1399	0.4550	1.0815
CS11-18_42	-93.78	3.396	0.319	14.89	53	171	3.06	2.29932	0.1090	**0.30**	4.9091	2.3194	0.3265	2.2993
CS11-18_43	-208.5	2.82	0.266	13.01	44	150	3.21	1.67269	0.1091	**0.35**	4.6854	1.708	0.3114	1.6727
CS11-18_44	290	2.976	0.458	8.48	46	98	1.98	2.37912	0.1779	**0.45**	12.3860	2.4208	0.5048	2.3791
CS11-18_45	**351**	7.238	0.725	32.74	113	377	3.12	2.81097	0.1159	0.90	5.1207	2.951	0.3204	2.811
CS11-18_46	-231.5	4.845	0.464	22.77	76	262	3.26	1.01575	0.1105	**0.27**	4.6744	1.0517	0.3067	1.0158
CS11-18_47	-98.25	5.185	0.795	15.47	81	178	2.06	2.47727	0.1775	**0.40**	11.8640	2.5098	0.4848	2.4773
CS11-18_48	133.3	5.009	0.773	14.41	78	166	1.96	1.2178	0.1822	**0.30**	12.8307	1.2541	0.5108	1.2178
CS11-18_49	-166.7	7.166	1.08	21.28	112	245	2.02	3.03889	0.1744	**0.31**	11.8781	3.055	0.4939	3.0389
CS11-18_50	-153.6	4.582	0.68	13.93	71	160	2.11	1.47703	0.1719	**0.30**	11.2592	1.5075	0.4750	1.477
CS11-18_51	-198.1	2.233	0.214	10.11	35	116	3.13	2.19475	0.1095	0.53	4.8186	2.2575	0.3193	2.1948
CS11-18_52	-52.84	10.26	1	45.98	160	529	3.10	2.13794	0.1128	**0.33**	5.0265	2.1639	0.3231	2.1379
CS11-18_53	-119.3	4.027	0.663	10.82	63	125	1.86	2.22925	0.1905	**0.36**	14.1528	2.2579	0.5388	2.2293

CS11-18_54	-16.3	1.332	0.125	6.024	21	69	3.13	2.5683	0.1087	0.53	4.7888	2.6227	0.3195	2.5683
CS11-18_55	105.7	2.542	0.247	11.96	40	138	3.22	2.12939	0.1125	**0.38**	4.8148	2.1628	0.3103	2.1294
CS11-18_56	12.41	2.462	0.232	11.05	38	127	3.11	1.80816	0.1090	**0.30**	4.8300	1.8337	0.3213	1.8082
CS11-18_57	-198.7	1.409	0.133	6.504	22	75	3.12	2.24564	0.1090	0.57	4.8248	2.3172	0.3209	2.2456
CS11-18_58	**-468.3**	2.731	0.258	12.26	43	141	3.09	4.32846	0.1091	0.62	4.8653	4.3728	0.3235	4.3285
CS11-18_59	-29.71	2.621	0.249	11.72	41	135	3.07	3.07529	0.1101	**0.49**	4.9372	3.1136	0.3253	3.0753
CS11-18_60	-151.6	3.389	0.321	14.97	53	172	3.05	2.2291	0.1098	**0.43**	4.9632	2.2696	0.3278	2.2291
CS11-18_61	-88.84	3.738	0.354	16.79	58	193	3.17	1.01966	0.1094	**0.36**	4.7548	1.0828	0.3154	1.0197
CS11-18_62	**776.1**	3.974	0.398	48.07	62	553	8.36	1.92589	0.1159	0.82	1.9107	2.0948	0.1196	1.9259
CS11-18_63	**327.9**	2.339	0.382	6.91	36	80	2.04	1.55325	0.1858	**0.42**	12.5627	1.6094	0.4903	1.5533
CS11-18_64	89.08	3.015	0.482	8.381	47	96	1.93	1.17886	0.1850	**0.35**	13.2454	1.2283	0.5193	1.1789
CS11-18_65	-53.13	4.396	0.725	12.3	69	142	1.90	1.33306	0.1907	**0.29**	13.8453	1.3642	0.5266	1.3331
CS11-18_66	234.2	2.36	0.381	6.575	37	76	1.92	2.30702	0.1867	**0.38**	13.4006	2.3385	0.5206	2.307
CS11-18_67	-280.9	9.247	1.481	26.27	144	302	1.93	2.32013	0.1853	**0.30**	13.2255	2.3392	0.5177	2.3201
CS11-18_68	-200.6	3.806	0.348	17.68	59	204	3.19	1.9138	0.1059	**0.38**	4.5852	1.9507	0.3139	1.9138
CS11-18_69	-27.57	2.688	0.254	11.91	42	137	3.06	2.44723	0.1095	**0.29**	4.9381	2.4649	0.3272	2.4472
CS11-18_70	**-310.4**	5.155	0.493	23.31	80	268	3.11	2.27177	0.1105	**0.31**	4.9010	2.2926	0.3216	2.2718
CS11-18_71	-166.9	10.63	1.008	48.79	166	562	3.09	1.88497	0.1097	**0.35**	4.9004	1.9174	0.3241	1.885
CS11-18_72	-3.694	8.291	1.489	20.75	129	239	1.79	1.33126	0.2165	**0.43**	16.6370	1.4005	0.5574	1.3313
CS11-18_73	243.8	5.1	0.887	13.25	80	152	1.79	1.61685	0.2011	**0.30**	15.4636	1.6438	0.5577	1.6168
CS11-18_74	-108.9	3.121	0.296	14.36	49	165	3.15	1.7027	0.1096	**0.45**	4.7996	1.7612	0.3177	1.7027
CS11-18_75	-0.076	0.571	0.084	**1.739**	9	20	2.08	3.74882	0.1694	**0.37**	11.2215	3.7669	0.4803	3.7488
CS11-18_76	37.57	5.691	0.549	24.81	89	286	2.99	2.03555	0.1116	**0.34**	5.1444	2.064	0.3345	2.0356
CS11-18_77	-100.7	1.812	0.171	8.137	28	94	3.07	2.0618	0.1093	**0.44**	4.9023	2.1089	0.3253	2.0618
CS11-18_78	**-406.1**	5.824	0.902	16.96	91	195	2.00	1.64366	0.1792	**0.31**	12.3475	1.6727	0.4998	1.6437
CS11-18_79	-55.87	3.202	0.302	14.44	50	166	3.09	1.79648	0.1091	**0.40**	4.8642	1.8404	0.3234	1.7965
CS11-18_80	-31.32	1.176	0.187	**3.292**	18	38	1.92	1.2911	0.1841	0.65	13.2149	1.4444	0.5205	1.2911
CS11-18_81	77.57	5.192	0.491	22.26	81	256	2.98	0.87058	0.1096	**0.38**	5.0676	0.9489	0.3353	0.8706
CS11-19_1	-36.22	1.068	0.093	5.498	28	97	3.46	1.21388	0.0993	**0.36**	3.9611	1.2667	0.2893	1.2139
CS11-19_2	215.4	5.525	0.423	37.52	146	661	4.55	2.23246	0.0879	**0.44**	2.6639	2.2757	0.2197	2.2325
CS11-19_3	-44.82	0.719	0.064	**3.715**	19	65	3.47	2.12184	0.1014	0.60	4.0239	2.2043	0.2878	2.1218
CS11-19_4	**1181**	2.6	0.361	15.27	69	269	3.95	1.03152	0.1535	2.55	5.3613	2.7529	0.2532	1.0315

CS11-19_5	-19.68	0.392	0.035	**2.071**	10	36	3.56	1.71016	0.1021	0.98	3.9595	1.9721	0.2812	1.7102
CS11-19_6	-95.38	0.427	0.032	**2.724**	11	48	4.41	1.37115	0.0867	0.64	2.7098	1.5128	0.2267	1.3711
CS11-19_7	-52.62	1.064	0.09	6.742	28	119	4.25	1.91491	0.0972	0.89	3.1530	2.1116	0.2353	1.9149
CS11-19_9	165.9	2.299	0.221	10.39	61	183	3.04	1.70437	0.1106	**0.46**	5.0178	1.766	0.3291	1.7044
CS11-19_10	-19.73	1.201	0.091	7.807	32	137	4.33	2.77547	0.0866	**0.46**	2.7564	2.8126	0.2307	2.7755
CS11-19_11	-157.2	1.295	0.117	6.962	34	123	3.60	2.26779	0.1039	**0.47**	3.9852	2.3154	0.2781	2.2678
CS11-19_12	**460.8**	0.908	0.083	4.476	24	79	3.31	1.16228	0.1049	0.66	4.3701	1.3364	0.3023	1.1623
CS11-19_13	-12.73	1.374	0.109	8.241	36	145	4.03	1.85488	0.0915	0.60	3.1327	1.9498	0.2484	1.8549
CS11-19_14	-232.1	1.022	0.092	5.224	27	92	3.43	2.09488	0.1028	0.60	4.1338	2.1789	0.2915	2.0949
CS11-19_15	-34.74	2.082	0.199	10.47	55	184	3.38	2.63887	0.1095	0.52	4.4646	2.6898	0.2958	2.6389
CS11-19_16	43.65	0.93	0.083	4.864	25	86	3.51	1.96637	0.1019	0.68	4.0074	2.0823	0.2852	1.9664
CS11-19_17	-13.69	2.509	0.255	10.91	66	192	2.90	2.4986	0.1168	**0.34**	5.5497	2.5217	0.3445	2.4986
CS11-19_18	**-171.5**	**1.148**	**0.08**	**8.594**	**30**	**151**	**5.00**	**1.60273**	**0.0800**	**0.59**	**2.2078**	**1.7088**	**0.2000**	**1.6027**
CS11-19_19	-9.95	2.219	0.171	13.5	59	238	4.15	1.08383	0.0882	**0.40**	2.9303	1.1567	0.2409	1.0838
CS11-19_20	-153.2	0.818	0.073	4.048	22	71	3.39	1.56224	0.1020	0.63	4.1501	1.6845	0.2951	1.5622
CS11-19_21	-16.21	2.989	0.246	20.32	79	358	4.50	2.88399	0.0936	**0.38**	2.8671	2.9091	0.2220	2.884
CS11-19_22	133.8	0.381	0.038	**1.935**	10	34	3.33	1.13685	0.1151	0.90	4.7650	1.4525	0.3002	1.1368
CS11-19_23	-88.81	1.417	0.109	8.045	37	142	3.88	0.97436	0.0908	0.51	3.2280	1.0982	0.2579	0.9744
CS11-19_24	-195.8	7.805	0.775	31.53	206	555	2.76	2.42938	0.1137	**0.39**	5.6849	2.4604	0.3625	2.4294
CS11-19_25	126.9	0.784	0.081	**3.367**	21	59	2.87	1.20914	0.1178	0.76	5.6623	1.4258	0.3485	1.2091
CS11-19_26	190.3	1.317	0.118	6.482	35	114	3.29	1.31834	0.1026	**0.33**	4.3061	1.3588	0.3043	1.3183
CS11-19_27	155.5	3.914	0.351	19.15	103	337	3.26	2.02067	0.1031	0.50	4.3667	2.0823	0.3072	2.0207
CS11-19_28	20.29	0.549	0.052	**2.607**	14	46	3.17	1.64914	0.1086	0.91	4.7303	1.8834	0.3159	1.6491
CS11-19_29	66.29	4.225	0.367	26.28	112	463	4.15	0.91841	0.1002	1.32	3.3287	1.6093	0.2410	0.9184
CS11-19_30	-194.6	1.034	0.09	5.272	27	93	3.40	1.87059	0.0999	0.72	4.0573	2.0061	0.2944	1.8706
CS11-19_31	-36.76	2.054	0.192	9.704	54	171	3.14	1.23061	0.1073	**0.45**	4.7057	1.3099	0.3180	1.2306
CS11-19_32	168.1	0.804	0.072	**3.992**	21	70	3.31	1.69106	0.1029	**0.34**	4.2878	1.724	0.3021	1.6911
CS11-19_33	-80.72	0.828	0.068	5.031	22	89	4.04	1.78056	0.0931	0.65	3.1769	1.896	0.2475	1.7806
CS11-19_34	153.5	0.742	0.083	4.43	20	78	3.98	1.51394	0.1287	0.71	4.4632	1.6706	0.2516	1.5139
CS11-19_35	-38.56	0.442	0.039	**2.342**	12	41	3.53	1.1328	0.1015	**0.34**	3.9675	1.182	0.2836	1.1328
CS11-19_36	89.1	1.528	0.13	9.77	40	172	4.23	2.66767	0.0973	0.69	3.1721	2.7564	0.2363	2.6677
CS11-19_37	173.2	5.685	0.499	33.15	150	584	3.81	3.12985	0.1012	1.21	3.6569	3.3563	0.2621	3.1299

CS11-19_38	-26.63	1.885	0.167	9.726	50	171	3.49	**0.6701**	0.1017	**0.36**	4.0221	0.7629	0.2868	**0.6701**
CS11-19_39	-198.5	1.237	0.092	8.166	33	144	4.40	1.89447	0.0858	0.78	2.6879	2.0472	0.2273	1.8945
CS11-19_40	228.7	0.464	0.042	**2.421**	12	43	3.45	**0.62982**	0.1040	0.92	4.1509	1.1143	0.2895	**0.6298**
CS11-19_41	261.2	1.332	0.126	6.446	35	114	3.20	1.47325	0.1083	**0.43**	4.6730	1.535	0.3130	1.4732
CS11-19_42	231.3	0.187	0.018	**0.885**	5	16	3.19	1.88553	0.1095	0.92	4.7325	2.0981	0.3134	1.8855
CS11-19_43	-283.2	1.301	0.115	6.901	34	122	3.51	1.19697	0.1013	0.72	3.9828	1.3948	0.2850	1.197
CS11-19_44	-252	2.142	0.196	10.84	57	191	3.34	1.83924	0.1043	**0.43**	4.3071	1.888	0.2995	1.8392
CS11-19_45	-7.321	1.2	0.106	6.258	32	110	3.44	1.62093	0.1016	**0.48**	4.0702	1.6914	0.2905	1.6209
CS11-19_46	-130.4	3.084	0.244	18.5	81	326	3.90	2.18478	0.0899	0.78	3.1813	2.3183	0.2566	2.1848
CS11-19_47	-98.97	3.101	0.28	14.77	82	260	3.22	2.61295	0.1070	0.62	4.5755	2.6861	0.3102	2.6129
CS11-19_48	-198.5	1.068	0.096	5.384	28	95	3.33	1.56828	0.1032	**0.36**	4.2734	1.6095	0.3003	1.5683
CS11-19_49	-143.4	2.595	0.231	13.27	68	234	3.36	1.98758	0.1020	**0.44**	4.1801	2.0358	0.2972	1.9876
CS11-19_50	-249.1	1.372	0.147	5.664	36	100	2.72	1.96354	0.1232	0.64	6.2392	2.0638	0.3672	1.9635
CS11-19_51	9.287	0.951	0.105	**3.888**	25	68	2.74	0.77492	0.1247	0.56	6.2663	0.954	0.3644	0.7749
CS11-19_52	-68.29	1.879	0.202	7.684	50	135	2.74	1.345	0.1234	**0.29**	6.2172	1.3758	0.3653	1.345
CS11-19_53	-235.6	1.227	0.089	9.272	32	163	4.95	2.32875	0.0831	**0.35**	2.3133	2.3545	0.2020	2.3288
CS11-19_54	-73.4	2.078	0.186	10.07	55	177	3.25	1.56263	0.1024	**0.42**	4.3444	1.617	0.3078	1.5626
CS11-19_55	-104.8	3.941	0.384	17.09	104	301	2.83	2.43486	0.1119	**0.36**	5.4535	2.4613	0.3535	2.4349
CS11-19_56	-30.06	3.615	0.434	17.68	95	311	3.15	5.04767	0.1368	0.54	5.9798	5.0768	0.3170	5.0477
CS11-19_57	-142	1.133	0.095	6.34	30	112	3.71	2.11917	0.0957	**0.45**	3.5542	2.1668	0.2693	2.1192
CS11-19_58	-173.7	2.586	0.232	12.54	68	221	3.18	2.03954	0.1028	**0.38**	4.4545	2.0741	0.3142	2.0395
CS11-19_59	-176.1	1.981	0.185	12.3	52	217	4.02	4.02419	0.1066	0.60	3.6546	4.0685	0.2486	4.0242
CS11-19_60	**-326.4**	3.083	0.245	19.3	81	340	4.03	3.66465	0.0909	**0.43**	3.1136	3.69	0.2484	3.6646
CS11-19_61	-66.43	2.137	0.159	13.89	56	245	4.25	1.87425	0.0856	**0.29**	2.7734	1.8969	0.2351	1.8743
CS11-19_62	-291.9	2.093	0.182	10.59	55	187	3.33	1.83522	0.0999	**0.41**	4.1321	1.8814	0.3001	1.8352
CS11-19_63	4.583	1.384	0.115	8.081	37	142	3.81	1.56648	0.0971	0.53	3.5126	1.6526	0.2623	1.5665
CS11-19_64	205.9	0.747	0.078	4.724	20	83	4.14	2.73266	0.1172	1.64	3.9058	3.1871	0.2417	2.7327
CS11-19_65	-117.9	3.045	0.289	14.12	80	249	3.05	2.50083	0.1092	**0.39**	4.9395	2.5303	0.3282	2.5008
CS11-19_66	**348.7**	3.869	0.347	32.06	102	564	5.24	5.7654	0.1028	0.52	2.7035	5.7889	0.1908	5.7654
CS11-19_67	-128.5	1.84	0.151	10.52	49	185	3.75	2.06753	0.0946	0.51	3.4727	2.1294	0.2663	2.0675
CS11-19_68	187.2	2.822	0.229	16.79	74	296	3.87	2.8255	0.0932	**0.50**	3.3212	2.8688	0.2585	2.8255
CS11-19_69	19.61	1.084	0.095	5.687	29	100	3.45	1.9698	0.1013	**0.43**	4.0485	2.0154	0.2897	1.9698

CS11-19_70	81.77	2.641	0.246	12.81	70	226	3.18	2.29368	0.1074	**0.30**	4.6529	2.3127	0.3142	2.2937
CS11-19_71	43.21	0.384	0.028	**2.633**	10	46	4.52	1.98975	0.0854	**0.49**	2.6080	2.0492	0.2214	1.9898
CS11-19_72	-42.62	1.678	0.276	4.844	44	85	1.89	2.65294	0.1887	**0.35**	13.7411	2.6758	0.5281	2.6529
CS11-19_73	**452.6**	4.349	0.439	34.6	115	609	4.97	4.97158	0.1154	0.70	3.2009	5.0201	0.2012	4.9716
CS11-19_74	27.8	1.248	0.1	7.343	33	129	3.85	2.89194	0.0916	0.50	3.2772	2.9354	0.2595	2.8919
CS11-19_75	-75.48	0.729	0.064	**3.793**	19	67	3.40	2.75523	0.1013	0.60	4.1106	2.8193	0.2942	2.7552
CS11-19_76	68.47	0.983	0.075	6.333	26	112	4.23	2.58493	0.0881	0.53	2.8673	2.6384	0.2362	2.5849
CS11-19_77	-286.2	3.795	0.67	13.46	100	237	2.29	3.8862	0.2030	**0.33**	12.2481	3.9003	0.4376	3.8862
CS11-19_78	114.9	2.084	0.219	8.544	55	150	2.69	2.69192	0.1204	**0.46**	6.1721	2.7315	0.3717	2.6919
CS11-19_79	-43.05	0.418	0.038	**2.11**	11	37	3.32	3.65441	0.1045	0.81	4.3378	3.7441	0.3011	3.6544
CS11-19_80	-243.3	1.785	0.16	9.323	47	164	3.43	2.05992	0.1031	0.52	4.1437	2.1246	0.2916	2.0599
CS11-19_81	**317.3**	4.4	0.462	26.6	116	468	4.31	2.84454	0.1205	**0.44**	3.8568	2.8788	0.2322	2.8445
CS11-19_82	-7.884	0.933	0.076	5.561	25	98	4.12	1.93777	0.0937	**0.35**	3.1363	1.9692	0.2429	1.9378
CS11-19_83	-119	2.061	0.201	8.545	54	150	2.88	1.49871	0.1121	**0.37**	5.3726	1.5428	0.3477	1.4987
CS11-19_84	**-408.4**	1.282	0.113	5.854	34	103	3.15	1.92393	0.1007	0.67	4.4087	2.0385	0.3175	1.9239
CS11-19_85	-120.4	4.47	0.421	19.62	118	345	3.00	2.43188	0.1082	**0.37**	4.9710	2.4604	0.3334	2.4319

Rho	$^{207}Pb/^{206}Pb$	2s abs	$^{206}Pb/^{238}U$	2s abs	$^{207}Pb/^{235}U$	2s abs	6-38/7-6
0.926	1078.9237	8.333949	1104.3	20.7	1095.8	14.7	-2%
0.958	1067.4055	7.956305	1123.4	27.1	1104.5	18.3	-5%
0.886	953.2803	16.40559	1013.9	28.6	994.9	21.7	-6%
0.910	932.8894	12.7744	1002.7	25.4	981.0	18.8	-7%
0.429	1006.4941	27.2549	1037.4	12.2	1027.5	19.0	-3%
0.857	1071.7414	14.53416	1087.5	24.0	1082.3	18.5	-1%
0.951	1068.8985	9.937295	1132.3	31.4	1110.8	21.3	-6%
0.947	1487.2949	13.10767	1509.4	54.9	1500.3	33.3	-1%
0.931	1016.2306	8.808697	969.7	20.0	984.0	15.0	5%
0.825	1503.3039	9.34482	1518.2	19.5	1512.0	13.7	-1%
0.814	993.7888	15.21693	972.0	18.9	978.7	16.1	2%
0.974	1493.5910	6.644588	1517.0	40.7	1507.3	24.1	-2%
0.764	1015.4652	23.56956	1036.7	26.4	1029.9	23.1	-2%
0.939	1082.6531	9.189354	1094.6	25.1	1090.6	17.6	-1%
0.709	1002.6858	21.306	1019.3	19.9	1014.0	18.9	-2%
0.906	1651.3365	10.56839	1590.8	34.3	1617.0	21.5	4%
0.956	1524.5921	9.070267	1501.8	41.8	1511.3	25.4	1%
0.876	1061.1872	17.17796	1001.6	28.7	1020.5	22.5	6%
0.974	1489.6620	6.654902	1517.9	40.7	1506.2	24.1	-2%
0.732	1047.0106	30.31366	964.7	28.9	990.1	27.5	8%
0.755	1069.8398	27.24296	1066.4	30.6	1067.5	26.9	0%
0.949	1493.9802	7.390919	1510.9	31.7	1503.9	19.3	-1%
0.746	923.3003	32.77664	969.7	32.1	955.6	29.3	-5%
0.956	1495.0955	9.915263	1547.1	46.6	1525.3	27.7	-3%
0.775	1081.7300	19.52012	1047.1	23.1	1058.4	20.1	3%
0.958	1035.6908	15.87981	1058.0	51.3	1050.7	35.4	-2%
0.977	993.9347	10.33459	972.8	42.0	979.3	29.6	2%
0.977	1241.3050	6.686417	1247.9	35.0	1245.5	22.5	-1%
0.680	991.0858	31.40465	961.6	25.6	970.6	26.0	3%
0.912	955.0990	15.56833	956.3	30.0	956.0	22.7	0%
0.429	1018.7819	47.31787	971.5	20.0	986.1	32.1	5%
0.967	1053.1113	7.594379	1007.5	26.5	1022.0	18.8	4%

0.979	1500.6558	9.708568	1488.4	65.2	1493.5	38.7	1%
0.987	1262.9423	5.897652	1252.5	42.4	1256.3	26.9	1%
0.662	1227.6302	36.57784	1180.1	35.4	1197.0	34.4	4%
0.980	1587.8789	11.82372	1317.6	74.2	1424.4	47.8	17%
0.970	1502.9053	12.79931	1467.5	70.5	1482.0	42.5	2%
0.979	1501.9676	7.678509	1466.0	51.2	1480.8	30.7	2%
0.963	991.4911	10.1035	974.1	32.1	979.5	23.0	2%
0.802	1276.0382	23.9138	912.6	28.0	1025.8	26.2	28%
0.668	991.5215	25.8534	1044.6	22.0	1027.6	21.8	-5%
0.857	970.9422	21.17286	970.3	31.0	970.5	24.9	0%
0.784	945.0724	27.18486	997.0	30.9	980.9	26.6	-5%
0.909	955.5082	15.02123	1003.6	29.8	988.6	22.1	-5%
0.802	930.6317	32.62557	980.2	38.7	965.0	32.6	-5%
0.877	985.5770	15.55771	1023.5	26.4	1011.5	20.2	-4%
0.870	1098.3331	34.53596	1124.9	62.5	1115.9	46.3	-2%
0.976	1485.4852	6.665901	1526.6	42.7	1509.5	25.0	-3%
0.393	1117.7350	54.73776	970.6	21.1	1016.8	37.6	13%
0.504	810.6576	50.87422	969.3	25.5	922.0	33.6	-20%
0.717	918.7276	28.79717	956.9	25.6	945.4	24.4	-4%
0.942	1499.5307	7.06728	1477.6	27.7	1486.6	17.3	1%
0.939	1027.8735	10.15228	1085.2	27.3	1066.3	19.0	-6%
0.817	1052.9046	19.34596	1049.7	26.3	1050.8	21.6	0%
0.766	1484.8522	9.791455	1507.4	16.5	1498.1	12.5	-2%
0.964	1078.3060	7.125586	1104.2	26.1	1095.5	17.8	-2%
0.626	987.6789	39.85495	987.4	28.8	987.5	31.2	0%
0.946	1070.9035	11.34082	1084.9	32.7	1080.2	22.8	-1%
0.956	1068.7884	9.253284	1101.8	30.4	1090.7	20.8	-3%
0.842	1220.6291	22.39358	1219.3	39.4	1219.8	29.6	0%
0.892	1063.3417	9.966072	1093.8	19.7	1083.7	14.5	-3%
0.945	1493.2216	7.39342	1571.6	31.4	1538.5	18.7	-5%
0.930	1094.3267	12.63011	1076.0	31.6	1082.1	22.6	2%
0.967	1524.8800	8.073988	1478.9	43.0	1497.9	26.1	3%

0.834	1016.5779	22.47188	1061.0	32.8	1046.6	26.0	-4%
0.897	1115.7213	16.12608	1082.5	32.7	1093.6	24.2	3%
0.922	1076.2114	14.24614	1084.7	33.7	1081.9	24.2	-1%
0.972	1523.4634	9.075596	1436.6	51.4	1472.0	31.6	6%
0.972	1523.4634	9.075596	1436.5	51.4	1471.9	31.6	6%
0.483	975.9101	76.98349	975.2	37.6	975.4	52.7	0%
0.895	922.6203	15.59162	981.9	27.7	963.8	21.0	-6%
0.981	1503.1145	6.21115	1553.7	45.5	1532.4	26.3	-3%
0.940	1549.9325	9.118702	1539.7	36.6	1544.0	22.3	1%
0.913	1069.9498	10.39732	1080.9	22.9	1077.3	16.7	-1%
0.325	951.1623	52.28261	958.9	15.6	956.5	32.9	-1%
0.946	1498.1415	9.370312	1436.8	37.1	1461.7	23.4	4%
0.837	1106.8777	16.71019	1113.5	26.1	1111.3	20.4	-1%
0.837	1106.8777	16.71019	1113.5	26.1	1111.2	20.4	-1%
0.760	1002.7049	28.41964	986.4	29.9	991.5	26.9	2%
0.912	1079.3978	15.47167	1075.2	33.8	1076.6	24.6	0%
0.903	1618.2533	9.605704	1628.0	31.1	1623.8	19.3	-1%
0.954	1111.3569	8.41748	1142.4	28.1	1131.7	19.1	-3%
0.987	1483.8971	5.242384	1485.6	45.0	1484.9	26.5	0%
0.920	967.5888	10.98215	996.3	23.2	987.4	17.2	-3%
0.763	880.2230	42.66851	958.5	43.2	935.1	38.3	-9%
0.708	884.6115	30.60741	968.5	26.6	943.2	25.4	-9%
0.959	1040.9845	13.27256	1069.7	43.6	1060.3	30.0	-3%
0.878	958.7329	19.93904	969.3	32.1	966.1	25.1	-1%
0.954	1114.7465	10.8398	1068.8	33.8	1084.0	23.8	4%
0.963	1030.6772	8.524943	1070.4	29.5	1057.4	20.2	-4%
0.770	893.0639	26.90414	954.3	27.8	936.0	24.7	-7%
0.957	1238.3365	12.29717	1218.9	45.8	1225.9	30.3	2%
0.975	1047.2287	10.05012	1051.6	42.6	1050.2	29.1	0%
0.778	953.7239	23.64662	961.4	25.6	959.1	22.6	-1%
0.731	887.2935	26.41008	963.8	24.4	940.8	22.7	-9%
0.955	1051.5048	12.19792	1035.3	37.3	1040.5	26.3	2%

0.968	1498.3771	8.850682	1494.4	48.0	1496.1	28.8	0%
0.970	1097.1567	9.344203	1086.6	37.0	1090.1	25.2	1%
0.918	1234.9596	11.22804	1201.8	28.9	1213.7	20.2	3%
0.948	1515.4503	8.773829	1462.0	36.0	1483.9	22.4	4%
0.8101	985.0134	18.53102	954.0	22.3	963.4	19.1	3%
0.6379	846.0056	136.1573	1091.2	108.0	1012.5	103.5	-29%
0.9108	1498.2591	10.07641	1513.4	31.6	1507.1	20.1	-1%
0.9573	1244.9699	10.95152	1233.3	41.5	1237.6	27.3	1%
0.7978	982.6117	26.27571	980.3	31.0	981.0	26.6	0%
0.8078	954.7795	20.54541	958.0	24.5	957.0	20.9	0%
0.963	1077.2059	12.02316	1079.9	42.4	1079.0	29.1	0%
0.9647	1505.7768	7.50754	1497.8	38.8	1501.1	23.4	1%
0.912	1120.5994	11.03593	1064.1	24.1	1082.8	17.8	5%
0.4933	858.0617	37.18582	947.1	17.9	920.7	24.6	-10%
0.9065	1105.4440	16.22603	1056.7	33.9	1072.7	25.2	4%
0.5433	892.3486	111.1891	961.1	61.9	940.4	75.8	-8%
0.9327	1090.6823	10.28359	1073.7	26.2	1079.3	18.8	2%
0.9153	1639.2589	11.9835	1591.8	41.3	1612.3	25.6	3%
0.7655	959.6885	19.64966	945.2	20.1	949.6	18.3	2%
0.8443	1660.9211	9.545784	1618.2	23.2	1636.8	15.5	3%
0.9612	1238.4547	9.109113	1264.6	37.1	1255.0	24.0	-2%
0.6385	957.6003	23.0281	964.5	16.7	962.4	18.0	-1%
0.727	987.5444	37.05946	962.0	34.4	969.8	32.6	3%
0.8651	1316.1304	19.75946	1233.5	39.3	1264.0	29.0	6%
0.9808	1669.1945	5.978526	1640.0	46.9	1652.8	26.7	2%
0.967	1659.4962	8.463217	1662.9	50.7	1661.4	28.9	0%
0.8959	995.8099	13.62214	974.6	24.4	981.1	18.8	2%
0.9636	1117.9082	11.28441	1075.7	40.3	1089.7	27.9	4%
0.9385	1118.1653	14.62994	1043.8	38.3	1068.1	27.7	7%
0.9758	1670.8579	7.534273	1677.5	53.5	1674.6	30.1	0%
0.9786	1525.5537	7.288068	1497.4	48.9	1509.1	29.1	2%
0.9817	1657.0350	6.241669	1632.5	49.9	1643.3	28.4	1%

0.8697	983.5729	21.55871	962.4	33.3	968.9	26.4	2%
0.9362	1108.7513	11.81259	1057.3	30.6	1074.2	22.1	5%
0.9494	977.4542	10.42461	967.6	27.7	970.6	20.2	1%
0.9048	1649.5732	18.33434	1644.4	60.7	1646.7	37.2	0%
0.9293	1144.9715	11.80692	1108.7	30.4	1121.0	21.6	3%
0.9844	1653.0493	5.575365	1681.4	49.6	1668.8	27.6	-2%
0.7816	850.0830	52.68795	960.4	56.4	927.5	48.3	-13%
0.9406	1512.0389	6.063652	1548.3	24.4	1533.0	14.9	-2%
0.858	935.7865	24.48173	960.6	35.5	953.1	28.3	-3%
0.803	946.1784	15.65055	935.2	17.9	938.5	15.6	1%
0.9077	1010.4205	12.73812	969.7	24.4	982.3	18.7	4%
0.7731	917.9528	35.80688	932.8	36.8	928.4	32.9	-2%
0.9093	1120.8358	12.44093	1088.1	27.2	1099.1	19.9	3%
0.9271	1067.3905	13.56953	1067.0	32.8	1067.1	23.5	0%
0.9056	1073.2380	18.07734	1051.4	37.2	1058.5	27.5	2%
0.8414	1094.6858	26.81938	1106.3	42.3	1102.4	32.8	-1%
0.6547	1045.8778	41.10151	1044.6	34.0	1045.0	34.6	0%
0.9718	1119.0280	6.656655	1079.5	27.3	1092.7	18.8	4%
0.7195	1323.1316	93.19506	1004.2	92.0	1109.9	89.5	24%
0.9644	1114.3066	9.483929	1094.8	34.8	1101.3	23.9	2%
0.9696	1645.0278	10.2774	1627.5	62.9	1635.2	36.1	1%
0.8704	1656.0530	15.63268	1635.8	43.0	1644.7	27.5	1%
0.5797	1491.6883	22.83866	1479.9	22.7	1484.8	22.8	1%
0.9276	1088.4003	9.16303	1098.2	22.9	1094.9	16.3	-1%
0.8459	1257.6132	15.03411	1249.5	27.6	1252.5	20.5	1%
0.7238	1071.3368	20.94111	1087.1	21.8	1081.9	19.9	-1%
0.9383	1107.1062	9.297398	1125.3	26.0	1119.1	18.1	-2%
0.8355	1121.5116	19.29842	900.2	24.7	966.8	21.7	20%
0.7268	1121.9052	28.90872	1082.9	30.5	1095.9	27.9	3%
0.9274	1521.9335	8.913235	1517.4	31.6	1519.3	19.7	0%
0.8378	1048.4951	16.79157	983.3	23.3	1003.7	19.3	6%
0.8788	1523.7661	11.00226	1498.2	28.7	1508.8	19.0	2%

0.9595	1656.9279	9.249638	1575.9	47.4	1610.9	28.2	5%
0.3056	965.6274	60.35769	951.1	16.8	955.5	37.7	2%
0.8992	982.8340	13.98784	975.4	25.5	977.7	19.5	1%
0.7677	1121.6944	16.8084	1062.1	19.7	1081.8	17.4	5%
0.9866	1539.6840	6.663788	1571.7	59.4	1558.1	34.0	-2%
0.6063	970.6814	28.71683	951.8	19.0	957.5	21.7	2%
0.5151	1019.6183	25.67396	950.3	13.5	971.5	18.3	7%
0.5511	929.3672	29.76017	943.0	16.8	938.9	21.1	-1%
0.5511	929.3672	29.76017	943.1	16.8	939.0	21.1	-1%
0.9335	1103.7080	13.53049	1108.1	35.8	1106.6	25.1	0%
0.9563	991.3124	9.38376	990.6	27.6	990.8	19.8	0%
0.9877	1659.6209	7.289623	1639.8	71.6	1648.5	40.3	1%
0.8996	1096.0241	14.57517	1032.4	28.6	1053.0	21.6	6%
0.9359	1762.2336	8.605725	1753.8	38.3	1757.6	22.1	0%
0.914	1803.2841	11.64729	1753.4	44.2	1776.3	26.1	3%
0.9947	2683.7225	5.041462	2642.0	127.2	2665.7	54.6	2%
0.9762	1792.2226	8.898295	1759.4	67.4	1774.5	37.1	2%
0.9937	1788.2065	5.043907	1616.3	69.9	1692.5	40.0	10%
0.9458	1839.9038	7.60893	1868.1	39.6	1854.8	21.8	-2%
0.9875	1927.6892	7.787813	1862.6	87.3	1893.6	46.2	3%
0.859	1810.6452	8.532561	1788.9	24.6	1799.0	15.3	1%
0.9884	1828.5400	6.0815	1819.1	68.7	1823.5	36.7	1%
0.9786	1802.4748	7.881347	1793.8	64.2	1797.8	34.9	0%
0.9919	1806.6140	6.356532	1815.6	86.1	1811.4	45.6	0%
0.981	1808.5342	5.807215	1832.6	51.3	1821.4	27.5	-1%
0.9887	2719.5617	5.83603	2678.3	101.4	2701.9	43.6	2%
0.9848	2686.0028	5.090122	2561.7	73.4	2631.7	32.8	5%
0.9925	1826.2472	5.979463	1775.7	82.7	1799.1	44.6	3%
0.9498	1791.8313	8.33568	1777.6	43.0	1784.2	24.3	1%
0.9846	1821.8267	5.9889	1856.2	59.7	1840.1	31.6	-2%
0.8999	1819.7796	13.35701	1708.5	45.4	1759.1	27.8	6%
0.9368	1811.2087	6.460768	1825.4	30.2	1818.8	17.1	-1%

0.9744	1822.1623	5.780765	1822.3	43.7	1822.2	23.7	0%
0.9525	1778.7439	8.81803	1715.8	45.4	1744.4	26.1	4%
0.9614	2699.9496	5.818717	2670.3	53.6	2687.2	23.9	1%
0.9552	1819.8116	5.685527	1780.7	31.4	1798.8	17.7	2%
0.9873	1767.7961	5.680728	1483.5	51.1	1604.8	31.1	16%
0.9727	1805.3056	5.91764	1770.6	42.1	1786.6	23.3	2%
0.981	2623.9918	5.077252	2498.6	63.7	2568.4	29.0	5%
0.9547	1796.2279	6.38249	1529.6	30.6	1645.2	19.0	15%
0.8784	1794.3080	11.86214	1740.6	36.4	1765.2	22.6	3%
0.7834	1794.3080	10.49838	1719.1	21.9	1753.3	15.4	4%
0.9717	1811.7720	7.192508	1819.0	51.4	1815.6	28.0	0%
0.8589	1722.7894	11.09476	1679.3	29.9	1698.7	19.3	3%
0.9931	1795.4472	5.186406	1681.4	71.2	1732.8	39.7	6%
0.973	1773.6020	5.983796	1787.3	43.0	1781.0	23.6	-1%
0.9819	2645.4100	5.153239	2629.1	69.2	2638.3	30.4	1%
0.9863	1754.6285	4.943306	1772.0	49.9	1764.0	27.0	-1%
0.9649	2707.3205	5.440782	2636.0	52.2	2676.5	23.4	3%
0.9695	2693.1645	6.225574	2687.7	65.2	2690.8	28.6	0%
0.9585	1795.0893	5.938778	1835.6	35.0	1816.7	19.2	-2%
0.9488	2437.0219	6.098993	2417.5	43.5	2428.1	20.8	1%
0.9913	1783.6057	5.555119	1821.4	72.6	1803.8	38.4	-2%
0.9793	1784.6548	6.295266	1747.8	51.0	1764.6	28.2	2%
0.9828	2633.7887	7.431598	2634.5	102.1	2634.1	44.5	0%
0.9526	1894.2659	16.15438	1791.6	87.3	1839.5	48.9	5%
0.9658	1808.3730	4.953483	1724.4	30.7	1762.7	17.4	5%
0.9871	2629.5418	6.690969	2548.1	103.4	2593.7	45.9	3%
0.9711	2672.6766	4.955555	2660.2	52.9	2667.3	23.4	0%
0.9947	2600.6658	5.225468	2587.4	128.2	2594.8	55.7	1%
0.9798	2576.3159	5.03867	2505.5	61.0	2544.8	27.7	3%
0.9722	1790.4445	9.631121	1786.2	68.1	1788.1	37.3	0%
0.988	1845.5297	6.043824	1804.8	67.0	1823.8	36.0	2%
0.9873	2746.4286	5.896971	2778.6	99.9	2760.0	41.9	-1%

0.9792	1777.7235	9.698751	1787.4	79.7	1782.9	43.1	-1%
0.9846	1840.8509	6.853932	1742.1	64.7	1787.5	35.7	5%
0.9861	1783.4581	5.555367	1795.9	56.4	1790.1	30.4	-1%
0.9691	1783.2941	10.41385	1794.3	70.0	1789.2	38.2	-1%
0.9899	1783.9172	11.3203	1806.9	135.0	1796.3	71.1	-1%
0.9877	1800.4332	8.859792	1815.8	96.6	1808.6	51.3	-1%
0.9821	1796.1954	7.770672	1827.8	70.6	1813.1	37.7	-2%
0.9417	1788.6969	6.639813	1767.0	31.4	1777.0	18.0	1%
0.9194	1893.6113	14.82429	728.2	26.5	1084.8	27.5	62%
0.9651	2705.5706	6.951347	2572.0	65.6	2647.4	29.8	5%
0.9597	2698.0506	5.69857	2696.3	51.7	2697.3	22.9	0%
0.9772	2748.1291	4.765689	2727.1	59.0	2739.2	25.5	1%
0.9865	2713.0773	6.304987	2701.9	101.0	2708.3	43.3	0%
0.9919	2700.7452	4.91747	2689.4	101.2	2695.9	43.2	0%
0.9811	1730.4733	6.932398	1760.1	58.7	1746.6	32.0	-2%
0.9928	1790.5424	5.360667	1824.7	77.3	1808.8	40.8	-2%
0.9909	1807.8407	5.60957	1797.8	70.9	1802.4	38.0	1%
0.9831	1793.9661	6.388171	1809.6	59.2	1802.3	31.8	-1%
0.9506	2954.5272	7.01641	2856.0	61.1	2914.1	26.5	3%
0.9836	2835.1088	4.83279	2857.1	74.2	2844.2	30.9	-1%
0.9668	1792.3041	8.194973	1778.4	52.7	1784.8	29.2	1%
0.9952	2552.1282	6.180361	2528.7	154.9	2541.7	67.9	1%
0.9862	1824.8602	6.199442	1860.0	65.4	1843.5	34.5	-2%
0.9777	1787.5361	8.076439	1815.8	64.9	1802.7	35.0	-2%
0.9826	2645.2192	5.153541	2613.0	70.2	2631.2	30.9	1%
0.9762	1784.4582	7.282524	1806.1	56.3	1796.1	30.5	-1%
0.8939	2690.4908	10.70171	2701.3	56.7	2695.1	26.9	0%
0.9175	1792.8257	6.873792	1864.2	28.1	1830.7	16.0	-4%
0.9583	1610.9670	6.745428	1638.1	35.0	1626.3	20.3	-2%
0.981	1381.1081	8.483353	1280.3	51.6	1318.5	33.1	7%
0.9626	1649.9453	11.07231	1630.6	60.8	1639.0	35.2	1%
0.3747	2385.7324	43.46386	1455.2	26.8	1878.7	46.1	39%

0.8672	1663.3543	18.17507	1597.2	48.2	1625.9	31.5	4%
0.9064	1353.7686	12.32831	1317.1	32.6	1331.2	22.2	3%
0.9069	1570.6691	16.66918	1362.3	46.9	1445.7	32.0	13%
0.9651	1808.8268	8.401868	1834.2	54.2	1822.3	29.5	-1%
0.9868	1352.5195	8.789077	1338.4	66.7	1343.8	41.1	1%
0.9794	1695.6728	8.607574	1581.7	63.3	1631.2	36.9	7%
0.8697	1711.8969	12.13152	1702.5	34.7	1706.7	21.8	1%
0.9513	1456.7148	11.42948	1430.0	47.4	1440.8	29.6	2%
0.9614	1676.1044	11.0708	1649.1	60.7	1661.0	35.0	2%
0.9811	1790.6166	9.483927	1670.4	77.2	1724.4	43.7	7%
0.9443	1659.4323	12.68375	1617.3	56.0	1635.7	33.3	3%
0.9908	1908.5307	6.112769	1908.1	82.0	1908.3	42.5	0%
0.938	**1198.0509**	**11.68422**	**1175.6**	**34.4**	**1183.5**	**23.6**	**2%**
0.937	1387.2066	7.756934	1391.5	27.1	1389.8	17.4	0%
0.9274	1661.0867	11.66442	1666.7	45.7	1664.2	27.2	0%
0.9914	1501.0031	7.21413	1292.7	67.2	1373.3	42.9	14%
0.7827	1881.5627	16.28472	1692.5	33.8	1778.8	24.1	10%
0.8872	1441.6196	9.655491	1479.3	25.7	1463.9	16.9	-3%
0.9874	1859.8169	7.038653	1994.2	82.8	1929.1	41.6	-7%
0.8481	1923.4703	13.54149	1927.7	40.2	1925.6	24.3	0%
0.9702	1672.3205	6.087761	1712.5	39.5	1694.5	22.2	-2%
0.9704	1680.5041	9.289477	1726.9	60.9	1706.1	33.8	-3%
0.8756	1776.1273	16.60032	1769.7	50.8	1772.6	31.1	0%
0.5707	1627.4827	24.57034	1391.8	23.0	1487.8	24.8	14%
0.9324	1622.9243	13.4859	1663.7	54.6	1645.8	32.2	-3%
0.9395	1754.6542	8.210191	1779.8	38.2	1768.3	21.7	-1%
0.9809	1677.6884	6.194256	1701.8	50.4	1691.0	28.0	-1%
0.9391	1489.7683	12.33351	1425.6	45.4	1451.6	28.9	4%
0.9062	2080.0584	12.43142	1446.5	39.1	1724.2	27.3	30%
0.9584	1651.1146	6.2554	1609.4	32.2	1627.6	19.0	3%
0.9678	1573.9539	12.98917	1367.6	65.4	1450.4	41.7	13%
0.9325	1645.8813	22.48248	1500.7	83.3	1562.0	52.2	9%

0.8784	1655.9236	6.754454	1625.3	19.2	1638.7	12.3	2%
0.9254	1332.9256	15.0096	1320.3	45.1	1325.1	29.9	1%
0.5652	1696.7038	16.94119	1638.9	18.2	1664.4	18.1	3%
0.9598	1770.9228	7.866631	1755.2	45.1	1762.4	25.4	1%
0.8987	1791.6968	16.75798	1757.2	57.7	1773.0	34.6	2%
0.8582	1648.7752	13.27754	1616.7	34.1	1630.7	22.4	2%
0.9742	1702.1562	7.8484	1688.7	54.4	1694.7	30.6	1%
0.9583	1653.7862	8.951132	1644.1	46.9	1648.3	27.2	1%
0.9424	1423.8704	14.81162	1472.4	57.3	1452.6	35.2	-3%
0.9728	1748.4452	11.40036	1741.8	79.3	1744.8	43.8	0%
0.9744	1682.6037	6.680591	1692.8	46.5	1688.3	26.1	-1%
0.9763	1660.8756	8.155912	1677.5	58.4	1670.1	32.8	-1%
0.9514	2003.7257	11.28312	2016.0	67.6	2010.0	35.5	-1%
0.8123	2024.9397	9.855521	2002.9	26.6	2013.8	16.6	1%
0.9776	2006.3768	5.137521	2007.4	46.2	2006.9	23.8	0%
0.9891	1270.4979	6.773938	1186.1	50.3	1216.4	32.8	7%
0.9664	1667.4588	7.689783	1729.9	47.2	1701.8	26.3	-4%
0.9892	1830.3225	6.527242	1951.3	81.5	1893.3	41.4	-7%
0.9943	2187.0109	9.451387	1775.3	154.8	1972.9	84.7	19%
0.978	1542.4816	8.48981	1537.1	57.7	1539.4	33.8	0%
0.9834	1675.8432	6.963852	1761.2	62.6	1722.5	33.8	-5%
0.9891	1742.6100	10.96878	1431.1	102.5	1561.5	62.9	18%
0.9931	1444.6105	8.224384	1430.3	93.3	1436.0	55.2	1%
0.988	1328.2638	5.662792	1361.1	45.8	1348.4	27.9	-2%
0.9754	1621.2994	7.711044	1692.0	54.4	1660.7	30.3	-4%
0.9479	1569.8281	9.861426	1501.4	41.8	1530.0	25.8	4%
0.8574	1914.0765	29.43207	1395.5	68.2	1614.9	50.3	27%
0.9883	1785.6245	7.021377	1829.4	79.2	1809.0	41.9	-2%
0.9959	1674.4316	9.633773	1125.8	118.0	1329.4	82.4	33%
0.9709	1519.4716	9.611059	1522.1	55.8	1521.0	33.0	0%
0.9849	1491.4175	9.403653	1482.3	74.4	1486.0	43.8	1%
0.9774	1648.7929	7.905579	1640.2	56.8	1644.0	32.3	1%

0.9918	1755.7939	5.412796	1761.4	70.3	1758.8	37.9	0%
0.971	1325.2542	9.488505	1289.3	46.3	1302.9	29.6	3%
0.9914	2731.0143	5.748368	2733.4	117.1	2732.0	49.4	0%
0.9903	1886.0311	12.53767	1181.7	106.5	1457.4	74.9	37%
0.9852	1459.0082	9.566563	1487.3	76.4	1475.7	44.7	-2%
0.9773	1648.8284	11.07941	1662.4	80.2	1656.4	45.0	-1%
0.9797	1383.7090	10.15111	1366.7	63.4	1373.4	39.0	1%
0.9964	2850.4825	5.388473	2339.8	150.7	2623.6	70.7	18%
0.9855	1962.4283	8.269828	2037.6	93.4	2000.5	46.6	-4%
0.976	1705.1654	14.99607	1696.9	108.1	1700.6	60.0	0%
0.9696	1679.8788	9.60528	1649.6	59.7	1663.0	34.2	2%
0.9881	1963.3759	7.895435	1345.8	68.7	1604.7	45.4	31%
0.984	1501.2457	6.624579	1401.6	48.6	1441.7	29.9	7%
0.9714	1833.0211	6.637323	1923.8	49.7	1880.5	26.1	-5%
0.9438	1637.2913	12.50922	1777.4	59.5	1714.0	33.2	-9%
0.9884	1768.5020	6.820243	1854.6	77.9	1814.4	40.8	-5%

Samples	^{204}Pb	^{206}Pb	^{207}Pb	^{208}Pb	^{232}Th	^{235}U	Th/U	Pbppm	Thppm
CS11-20_1	49	75825	6523	6485	54212	387931	2.7	7.1	46.8
CS11-20_2	281	97510	8232	14633	192364	569582	6.5	9.1	166.0
CS11-20_3	-250	100710	7815	13319	116981	612496	3.7	9.4	101.0
CS11-20_4	404	166544	20508	23174	112517	542636	4.0	15.6	97.1
CS11-20_5	337	378919	32977	39321	269719	2250367	2.3	35.4	232.8
CS11-20_6	24	43915	3470	5935	57860	308010	3.6	4.1	49.9
CS11-20_7	-1	73747	7501	11783	62346	289829	4.2	6.9	53.8
CS11-20_8	-235	258404	26758	64376	345807	1020163	6.5	24.1	298.4
CS11-20_9	507	243829	24211	36505	211531	921745	4.4	22.8	182.6
CS11-20_10	-33	39411	3098	15885	129282	239737	10.4	3.7	111.6
CS11-20_11	-32	253362	27433	36074	243055	1003992	4.7	23.7	209.8
CS11-20_12	90	239161	25334	38141	194186	886327	4.2	22.3	167.6
CS11-20_13	182	1203285	226142	247890	787519	2680125	5.7	112.4	679.7
CS11-20_14	-113	590487	66847	64309	351923	2828696	2.4	55.2	303.7
CS11-20_15	235	93157	8107	18199	119857	476113	4.9	8.7	103.4
CS11-20_16	192	90364	9599	43489	233398	352946	12.8	8.4	201.4
CS11-20_17	347	82001	9035	3112	17024	304704	1.1	7.7	14.7
CS11-20_18	27	185307	20258	18413	92350	661360	2.7	17.3	79.7
CS11-20_19	346	100152	9680	13795	83720	456625	3.5	9.4	72.3
CS11-20_20	-200	306999	27018	25539	161067	1683517	1.8	28.7	139.0
CS11-20_21	68	703504	120058	220457	855367	1898244	8.7	65.7	738.2
CS11-20_22	-203	240113	24452	34512	222510	1003278	4.3	22.4	192.0
CS11-20_24	190	170663	14273	28388	267267	1028462	5.0	15.9	230.7
CS11-20_25	163	7999	642	1837	15414	47357	6.3	0.7	13.3
CS11-20_26	183	282971	28886	31197	448962	1473249	5.9	26.4	387.5
CS11-20_27	-65	274248	22495	31263	243901	1528452	3.1	25.6	210.5
CS11-20_28	23	71986	13499	24096	81311	160435	9.8	6.7	70.2
CS11-20_29	-172	38283	2826	10457	98006	238319	7.9	3.6	84.6
CS11-20_30	67	138745	10847	29414	305712	874016	6.8	13.0	263.8
CS11-20_31	53	114112	17220	26885	102641	289623	6.8	10.7	88.6
CS11-20_32	-283	141581	14172	43006	337626	887410	7.3	13.2	291.4
CS11-20_33	418	331667	36966	62854	382130	1258267	5.9	31.0	329.8
CS11-20_34	-138	34934	2720	5055	47652	225414	4.1	3.3	41.1
CS11-20_35	66	97216	12061	59813	334991	391643	16.5	9.1	289.1
CS11-20_36	40	208159	18626	32334	250670	1043597	4.6	19.4	216.3
CS11-20_37	-303	262121	28698	21722	123199	923659	2.6	24.5	106.3
CS11-20_38	225	613167	46418	166691	1647444	4305087	7.4	57.3	1421.8
CS11-20_39	66	148533	15343	46735	286634	594200	9.3	13.9	247.4
CS11-20_40	259	430053	40236	49403	312928	1996811	3.0	40.2	270.1
CS11-20_41	-94	596772	62180	123014	653739	2282727	5.5	55.7	564.2
CS11-20_42	24	439344	45800	28433	154445	1603723	1.9	41.0	133.3
CS11-20_43	133	473584	51376	45635	248760	1772466	2.7	44.2	214.7
CS11-20_44	4	281196	29480	48976	294307	1152633	4.9	26.3	254.0
CS11-20_45	385	371903	41400	45217	494693	1646233	5.8	34.7	426.9
CS11-20_46	-3	47248	4162	20458	162461	250335	12.5	4.4	140.2
CS11-20_47	451	52529	4037	9281	86195	311272	5.3	4.9	74.4
CS11-20_48	-326	1305206	143146	127599	746713	5147858	2.8	121.9	644.5

CS11-20_49	183	29997	3084	12100	75524	122283	11.9	2.8	65.2
CS11-20_50	473	151275	12270	178597	1500984	919622	31.5	14.1	1295.4
CS11-20_51	363	200457	18344	44858	336685	947943	6.9	18.7	290.6
CS11-20_52	54	348440	35417	102424	635591	1350907	9.1	32.6	548.5
CS11-20_53	89	198489	16421	37098	450869	1297210	6.7	18.5	389.1
CS11-20_54	393	417129	45747	51965	759554	3143890	4.7	39.0	655.5
CS11-20_55	12	244657	23345	256455	1683940	1104446	29.4	22.9	1453.3
CS11-20_56	-100	213326	21361	51197	330353	846441	7.5	19.9	285.1
CS11-20_57	98	328832	31371	70805	480132	1429903	6.5	30.7	414.4
CS11-20_58	-33	207855	23470	19888	191909	858659	4.3	19.4	165.6
CS11-20_59	126	41029	3665	14321	118561	217863	10.5	3.8	102.3
CS11-20_60	80	153373	17013	15059	88590	544487	3.1	14.3	76.5
CS11-20_62	229	256291	21625	28369	241798	1238967	3.8	23.9	208.7
CS11-20_62	-149	1470249	160943	106643	578893	5271132	2.1	137.3	499.6
CS11-20_63	-32	124754	10852	16773	122717	599777	3.9	11.7	105.9
CS11-20_64	395	171032	17337	41964	261145	664866	7.6	16.0	225.4
CS11-20_65	264	720280	76991	229639	2080840	4265132	9.4	67.3	1795.9
CS11-20_66	337	453270	48387	47680	270208	1658774	3.1	42.3	233.2
CS11-20_67	227	486907	38951	108475	1288173	3433551	7.2	45.5	1111.8
CS11-20_68	147	116503	12448	12330	74975	429598	3.4	10.9	64.7
CS11-20_69	-6	288553	31308	71257	556787	1834363	5.9	27.0	480.5
CS11-20_70	312	464255	94119	146612	522043	958124	10.5	43.4	450.5
CS11-20_71	280	354176	38848	46934	376918	1490733	4.9	33.1	325.3
CS11-20_72	269	290452	29025	41509	255060	1126273	4.4	27.1	220.1
CS11-20_73	-28	541796	55041	81915	528214	2319484	4.4	50.6	455.9
CS11-20_74	-143	89790	9476	7280	44076	326292	2.6	8.4	38.0
CS11-20_75	102	98380	11041	11795	60247	357984	3.2	9.2	52.0
CS11-20_76	-21	63619	11288	14604	54363	146593	7.2	5.9	46.9

Uppm	$^{238}U/^{206}Pb$	1s %	$^{207}Pb/^{206}Pb$	1s %	$^{207}Pb/^{235}U$	1s %	$^{206}Pb/^{238}U$	1s %	Rho
17.3	4.6117	1.38	0.0861	1.14	2.5730	1.76	0.2168	1.70	0.78
25.5	5.1429	1.20	0.0844	1.12	2.2623	1.62	0.1944	1.57	0.74
27.4	5.3724	1.17	0.0775	1.32	1.9883	1.75	0.1861	1.54	0.67
24.3	2.8705	1.22	0.1213	0.99	5.8233	1.55	0.3484	1.58	0.79
100.6	5.1135	1.30	0.0853	1.05	2.2984	1.64	0.1956	1.64	0.79
13.8	6.1646	1.27	0.0758	1.16	1.6938	1.70	0.1622	1.62	0.75
13.0	3.5053	1.34	0.1022	1.12	4.0182	1.72	0.2853	1.67	0.78
45.6	3.4866	1.10	0.1033	1.01	4.0814	1.47	0.2868	1.49	0.75
41.2	3.3369	1.25	0.0998	1.07	4.1215	1.63	0.2997	1.60	0.77
10.7	5.4069	1.45	0.0796	1.64	2.0277	2.17	0.1849	1.76	0.67
44.9	3.4760	0.88	0.1075	0.94	4.2616	1.26	0.2877	1.33	0.70
39.6	3.2683	1.32	0.1048	0.92	4.4211	1.58	0.3060	1.66	0.83
119.8	1.9678	0.97	0.1869	0.97	13.0909	1.34	0.5082	1.40	0.72
126.5	4.2100	1.48	0.1128	0.88	3.6927	1.70	0.2375	1.79	0.87
21.3	4.4077	1.55	0.0858	1.23	2.6822	1.96	0.2269	1.84	0.79
15.8	3.3873	1.36	0.1026	1.04	4.1749	1.69	0.2952	1.69	0.80
13.6	3.2649	1.69	0.1095	1.38	4.6203	2.16	0.3063	1.97	0.78
29.6	3.1689	1.11	0.1076	1.01	4.6794	1.48	0.3156	1.50	0.75
20.4	3.9939	1.23	0.0965	1.04	3.3300	1.59	0.2504	1.59	0.77
75.3	4.8353	1.11	0.0876	0.99	2.4962	1.46	0.2068	1.50	0.76
84.9	2.3796	0.84	0.1683	0.91	9.7470	1.21	0.4202	1.31	0.69
44.9	3.6921	1.27	0.1019	1.04	3.8029	1.62	0.2708	1.62	0.78
46.0	5.3138	0.99	0.0835	0.97	2.1650	1.35	0.1882	1.41	0.73
2.1	5.1855	3.41	0.0776	2.89	2.0619	4.47	0.1928	3.56	0.76
65.9	4.5916	1.18	0.1005	0.81	3.0178	1.40	0.2178	1.55	0.84
68.3	4.9202	1.24	0.0824	1.09	2.3075	1.63	0.2032	1.59	0.76
7.2	1.9576	1.49	0.1880	1.39	13.2331	2.02	0.5108	1.80	0.74
10.7	5.6030	1.65	0.0738	1.69	1.8150	2.34	0.1785	1.93	0.70
39.1	5.5707	1.13	0.0778	0.97	1.9238	1.46	0.1795	1.51	0.77
12.9	2.2794	1.31	0.1542	1.06	9.3214	1.67	0.4387	1.65	0.79
39.7	5.5973	1.45	0.0989	0.92	2.4341	1.70	0.1787	1.77	0.86
56.3	3.2534	0.91	0.1095	0.93	4.6368	1.27	0.3074	1.35	0.71
10.1	5.6786	1.22	0.0762	1.37	1.8486	1.81	0.1761	1.58	0.67
17.5	3.5721	1.28	0.1216	1.87	4.6934	2.25	0.2799	1.63	0.57
46.7	4.3994	1.16	0.0890	1.13	2.7867	1.60	0.2273	1.54	0.73
41.3	3.1426	1.02	0.1096	0.91	4.8084	1.34	0.3182	1.43	0.76
192.5	6.1263	1.06	0.0761	0.91	1.7126	1.37	0.1632	1.46	0.77
26.6	3.4947	0.98	0.1017	0.97	4.0119	1.35	0.2861	1.40	0.73
89.3	4.1110	0.81	0.0935	0.89	3.1350	1.17	0.2433	1.29	0.69
102.1	3.3316	0.76	0.1039	0.66	4.2994	0.97	0.3002	1.26	0.79
71.7	3.1919	0.93	0.1055	0.88	4.5570	1.25	0.3133	1.37	0.74
79.2	3.2533	0.97	0.1069	0.97	4.5283	1.35	0.3074	1.40	0.72
51.5	3.5595	0.82	0.1031	0.95	3.9929	1.22	0.2809	1.30	0.67
73.6	3.8703	1.12	0.1089	0.91	3.8781	1.41	0.2584	1.50	0.79
11.2	4.6544	1.45	0.0876	1.43	2.5944	2.02	0.2149	1.76	0.72
13.9	5.4278	1.54	0.0769	1.32	1.9523	2.01	0.1842	1.84	0.77
230.2	3.4615	1.17	0.1092	0.70	4.3475	1.34	0.2889	1.54	0.88

5.5	3.5262	2.12	0.0995	1.60	3.8882	2.64	0.2836	2.34	0.80
41.1	5.2726	1.01	0.0794	0.94	2.0755	1.35	0.1897	1.42	0.75
42.4	4.0363	1.05	0.0905	0.89	3.0908	1.35	0.2477	1.45	0.78
60.4	3.4303	1.09	0.1023	0.94	4.1099	1.41	0.2915	1.48	0.77
58.0	5.5765	1.09	0.0801	1.05	1.9803	1.49	0.1793	1.48	0.73
140.6	6.7813	1.43	0.1096	0.93	2.2278	1.68	0.1475	1.74	0.85
49.4	3.8863	1.00	0.0939	0.76	3.3284	1.23	0.2573	1.42	0.82
37.8	3.4421	1.03	0.0992	0.66	3.9737	1.19	0.2905	1.44	0.87
63.9	3.8599	0.86	0.0949	0.87	3.3900	1.20	0.2591	1.32	0.72
38.4	3.6425	1.29	0.1115	0.80	4.2200	1.50	0.2745	1.64	0.87
9.7	4.5468	1.38	0.0885	1.08	2.6827	1.73	0.2199	1.71	0.80
24.3	3.1064	1.07	0.1102	0.97	4.8904	1.42	0.3219	1.46	0.75
55.4	4.2610	1.23	0.0852	0.87	2.7544	1.48	0.2347	1.58	0.83
235.7	3.1151	0.99	0.1084	0.82	4.7978	1.26	0.3210	1.41	0.79
26.8	4.2425	1.21	0.0868	1.00	2.8213	1.54	0.2357	1.57	0.78
29.7	3.4265	0.91	0.1010	0.66	4.0637	1.09	0.2918	1.36	0.84
190.7	5.2460	1.17	0.1067	0.83	2.8019	1.41	0.1906	1.54	0.83
74.2	3.2012	0.69	0.1074	0.73	4.6242	0.97	0.3124	1.22	0.71
153.5	6.1358	0.97	0.0793	0.94	1.7816	1.32	0.1630	1.40	0.73
19.2	3.2184	1.11	0.1075	0.90	4.6046	1.41	0.3107	1.50	0.79
82.0	5.2891	3.67	0.1083	0.88	2.8232	3.76	0.1891	3.80	0.97
42.8	1.7858	0.85	0.1991	0.91	15.3657	1.22	0.5600	1.31	0.70
66.6	3.5960	1.12	0.1080	0.93	4.1378	1.43	0.2781	1.50	0.78
50.4	3.3947	1.01	0.1004	0.82	4.0766	1.27	0.2946	1.42	0.79
103.7	3.7054	1.00	0.1014	0.85	3.7701	1.28	0.2699	1.41	0.78
14.6	3.1734	1.21	0.1043	1.04	4.5299	1.57	0.3151	1.57	0.77
16.0	3.1701	1.40	0.1104	1.03	4.8016	1.71	0.3154	1.72	0.82
6.6	1.9781	1.67	0.1760	1.02	12.2618	1.94	0.5055	1.95	0.86

$^{207}Pb/^{206}Pb$	2s abs	$^{206}Pb/^{238}U$	2s abs	$^{207}Pb/^{235}U$	2s abs	6-38/7-6	6-38/7-35
1340.3968	21.97	1265.2	39.0	1293.0	25.5	6%	2%
1302.2829	21.762	1145.4	32.8	1200.6	22.6	12%	5%
1134.3343	26.355	1100.4	31.1	1111.6	23.3	3%	1%
1975.2573	17.649	1926.8	52.4	1949.9	26.5	2%	1%
1321.9142	20.256	1151.4	34.5	1211.8	23.0	13%	5%
1088.8677	23.227	969.1	29.1	1006.2	21.5	11%	4%
1664.4784	20.648	1617.9	47.7	1637.9	27.6	3%	1%
1683.4253	18.717	1625.6	42.6	1650.6	23.7	3%	2%
1620.1657	19.975	1689.7	47.5	1658.6	26.2	-4%	-2%
1185.8988	32.416	1094.0	35.3	1124.8	29.1	8%	3%
1757.1881	17.232	1630.0	38.3	1686.0	20.5	7%	3%
1711.5570	16.89	1720.9	49.8	1716.3	25.9	-1%	0%
2715.2086	15.933	2648.9	60.4	2686.2	25.0	2%	1%
1845.0514	15.929	1373.8	44.1	1569.8	26.8	26%	12%
1333.2680	23.754	1318.1	43.8	1323.6	28.5	1%	0%
1671.9019	19.262	1667.6	49.5	1669.1	27.3	0%	0%
1790.3476	25.082	1722.4	59.2	1752.9	35.5	4%	2%
1759.0877	18.407	1768.0	46.2	1763.6	24.4	-1%	0%
1557.5626	19.59	1440.4	40.9	1488.1	24.6	8%	3%
1373.2178	19.084	1211.8	33.0	1270.9	21.0	12%	5%
2540.7607	15.273	2261.6	49.6	2411.2	22.0	11%	6%
1658.6183	19.348	1545.1	44.3	1593.4	25.8	7%	3%
1280.3689	18.867	1111.6	28.6	1169.9	18.6	13%	5%
1136.1326	57.526	1136.8	73.8	1136.2	59.3	0%	0%
1634.1561	14.964	1270.2	35.6	1412.1	21.2	22%	10%
1254.5175	21.342	1192.7	34.6	1214.6	22.8	5%	2%
2724.4719	22.972	2660.1	77.9	2696.4	37.5	2%	1%
1035.7129	34.044	1058.6	37.6	1050.9	30.2	-2%	-1%
1140.8354	19.351	1064.3	29.5	1089.4	19.4	7%	2%
2392.6802	18.094	2344.9	64.6	2370.1	30.1	2%	1%
1602.7029	17.135	1059.6	34.4	1252.7	24.2	34%	15%
1790.4021	16.996	1727.8	40.9	1755.9	21.0	3%	2%
1099.5231	27.378	1045.6	30.4	1062.9	23.6	5%	2%
1980.5475	33.333	1591.1	45.7	1766.1	37.0	20%	10%
1403.2427	21.741	1320.3	36.6	1352.0	23.7	6%	2%
1793.4795	16.566	1781.0	44.5	1786.4	22.3	1%	0%
1098.4648	18.306	974.7	26.3	1013.3	17.4	11%	4%
1655.9272	17.895	1622.3	40.1	1636.6	21.7	2%	1%
1498.3471	16.775	1403.6	32.4	1441.3	17.8	6%	3%
1695.4906	12.187	1692.1	37.4	1693.2	15.9	0%	0%
1723.7779	16.149	1756.9	42.0	1741.4	20.6	-2%	-1%
1747.1284	17.787	1727.8	42.2	1736.2	22.2	1%	0%
1681.1089	17.484	1596.1	36.5	1632.7	19.7	5%	2%
1781.2545	16.555	1481.5	39.6	1609.1	22.6	17%	8%
1374.0817	27.435	1254.6	40.1	1299.0	29.1	9%	3%
1118.3194	26.302	1090.1	36.8	1099.2	26.7	3%	1%
1786.0307	12.781	1636.0	44.4	1702.4	21.8	8%	4%

1614.4655	29.718	1609.4	66.4	1611.2	41.7	0%	0%
1182.2006	18.58	1119.5	29.2	1140.7	18.4	5%	2%
1436.5301	17.058	1426.9	37.0	1430.4	20.5	1%	0%
1666.2341	17.321	1649.1	42.9	1656.3	22.7	1%	0%
1200.1037	20.656	1063.3	29.0	1108.8	19.9	11%	4%
1793.0841	17	886.7	28.8	1189.8	23.3	51%	25%
1505.2311	14.446	1476.1	37.3	1487.7	19.1	2%	1%
1610.0072	12.233	1644.1	41.7	1628.8	19.2	-2%	-1%
1526.9702	16.481	1485.1	35.0	1502.1	18.6	3%	1%
1824.5841	14.474	1563.8	45.3	1677.9	24.3	14%	7%
1393.4539	20.732	1281.5	39.5	1323.7	25.3	8%	3%
1803.2073	17.69	1799.1	45.8	1800.6	23.6	0%	0%
1319.1413	16.863	1359.0	38.7	1343.3	21.8	-3%	-1%
1773.4386	14.987	1794.7	44.1	1784.5	21.0	-1%	-1%
1357.1571	19.222	1364.4	38.4	1361.2	22.8	-1%	0%
1643.1638	12.261	1650.7	39.4	1647.0	17.7	0%	0%
1743.0165	15.264	1124.7	31.8	1356.1	20.9	35%	17%
1755.9248	13.387	1752.4	37.2	1753.6	16.0	0%	0%
1180.1111	18.522	973.3	25.2	1038.8	17.0	18%	6%
1757.9796	16.537	1744.2	45.6	1750.1	23.2	1%	0%
1771.8264	16.101	1116.3	77.5	1361.7	54.9	37%	18%
2818.8352	14.941	2866.6	60.4	2838.2	22.9	-2%	-1%
1765.3448	17.029	1581.7	42.0	1661.8	23.1	10%	5%
1631.7492	15.204	1664.4	41.6	1649.6	20.5	-2%	-1%
1649.2733	15.7	1540.2	38.6	1586.4	20.3	7%	3%
1702.1299	19.086	1765.8	48.4	1736.5	25.8	-4%	-2%
1806.8087	18.654	1767.4	53.0	1785.2	28.4	2%	1%
2615.4959	17.017	2637.5	83.9	2624.7	35.8	-1%	0%

Sample	^{204}Pb	^{206}Pb	^{207}Pb	^{238}U	Pbppm	Uppm	$^{238}U/^{206}Pb$	1s %	$^{207}Pb/^{206}Pb$	1s %	$^{207}Pb/^{235}U$	1s %	$^{206}Pb/^{238}U$	1s %	Rho
Siam1_1	-20.7	1.5	0.1	**3.9**	16.8	45.0	2.684	1.30	0.122	0.69	6.277	1.47	0.373	1.30	0.883
Siam1_2	**-355.8**	0.7	0.1	**1.5**	8.1	17.6	2.177	2.24	0.119	1.78	7.559	2.86	0.459	2.24	0.784
Siam1_3	**431.9**	5.3	0.6	38.4	59.6	442.5	7.424	6.93	0.144	0.70	2.682	6.96	0.135	6.93	0.995
Siam1_4	-155.0	1.8	0.2	4.4	20.2	50.2	2.503	1.12	0.134	0.61	7.391	1.28	0.400	1.12	0.877
Siam1_5	44.1	0.5	0.0	**1.3**	5.3	14.9	2.836	2.00	0.117	1.93	5.683	2.78	0.353	2.00	0.720
Siam1_6	**456.1**	3.8	0.4	10.1	43.3	116.9	2.740	1.68	0.118	0.32	5.938	1.71	0.365	1.68	0.983
Siam1_7	**319.1**	6.3	0.6	17.1	71.2	197.1	2.843	0.81	0.115	0.24	5.567	0.84	0.352	0.81	0.960
Siam1_8	98.7	1.5	0.2	**3.5**	16.8	40.4	2.477	0.65	0.134	0.69	7.476	0.95	0.404	0.65	0.685
Siam1_9	-183.4	0.8	0.1	**1.9**	8.9	22.2	2.575	0.69	0.133	1.20	7.120	1.38	0.388	0.69	0.498
Siam1_10	**686.5**	6.6	0.6	19.1	75.2	220.0	2.992	1.16	0.116	0.24	5.352	1.18	0.334	1.16	0.980
Siam1_11	236.6	2.4	0.2	6.7	25.0	68.8	2.801	0.83	0.123	0.65	6.044	1.05	0.357	0.83	0.786
Siam1_13	-52.5	5.5	0.8	11.0	56.2	114.0	2.023	1.48	0.176	0.86	12.023	1.72	0.494	1.48	0.865
Siam1_14	-3.9	2.8	0.3	8.3	28.5	85.8	3.026	1.28	0.118	0.47	5.358	1.37	0.330	1.28	0.939
Siam1_15	-128.9	3.3	0.3	10.7	34.3	111.2	3.280	1.25	0.122	0.41	5.134	1.32	0.305	1.25	0.950
Siam1_20	**-360.3**	5.0	0.6	12.6	51.8	130.6	2.548	1.04	0.133	0.25	7.217	1.07	0.393	1.04	0.971
Siam1_17	-50.8	1.1	0.1	**2.6**	10.9	26.7	2.476	3.78	0.112	1.08	6.263	3.94	0.404	3.78	0.961
Siam1_18	71.4	1.6	0.2	4.1	17.0	42.8	2.535	1.33	0.135	0.73	7.324	1.52	0.394	1.33	0.878
Siam1_19	**-369.7**	0.8	0.1	**1.9**	8.3	19.8	2.398	5.09	0.119	1.35	6.858	5.26	0.417	5.09	0.967
Siam1_22	**389.4**	0.6	0.1	**1.6**	6.5	16.8	2.613	1.09	0.132	1.41	6.991	1.78	0.383	1.09	0.612
Siam1_23	**405.3**	12.5	1.2	37.5	128.4	387.9	3.057	1.15	0.113	0.23	5.116	1.17	0.327	1.15	0.981
Siam1_24	76.5	0.6	0.1	**1.6**	6.5	16.4	2.527	2.15	0.135	1.39	7.357	2.56	0.396	2.15	0.839
Siam1_25	226.5	1.3	0.1	**3.2**	13.9	33.4	2.408	1.13	0.134	0.70	7.656	1.33	0.415	1.13	0.851
Siam1_26	156.6	7.6	0.8	22.6	78.7	234.2	2.988	1.96	0.122	0.32	5.608	1.99	0.335	1.96	0.987
Siam1_28	59.3	1.0	0.1	**2.2**	10.4	23.0	2.221	6.92	0.119	0.99	7.396	6.99	0.450	6.92	0.990
Siam1_29	153.1	3.7	0.4	10.5	37.7	108.6	2.921	3.58	0.116	0.44	5.477	3.61	0.342	3.58	0.993
Siam1_30	**421.9**	4.3	0.7	7.6	44.4	78.2	1.778	3.28	0.202	0.19	15.637	3.29	0.562	3.28	0.998
Siam1_88	-9.3	0.9	0.1	2.4	10.6	25.1	2.461	1.75	0.133	0.95	7.424	2.00	0.406	*1.75*	0.879
Siam1_89	-14.3	1.5	0.2	4.0	17.1	41.5	2.517	1.50	0.133	0.68	7.307	1.65	0.397	*1.50*	0.911
Siam1_90	95.4	1.6	0.2	4.3	18.1	44.7	2.549	1.79	0.133	0.62	7.206	1.89	0.392	*1.79*	0.944
Siam1_91	249.2	2.1	0.4	3.7	23.5	38.5	1.694	1.82	0.217	0.47	17.663	1.88	0.590	*1.82*	0.968
Siam1_92	200.3	0.8	0.1	2.1	8.7	21.5	2.559	1.68	0.135	1.12	7.253	2.02	0.391	*1.68*	0.832
Siam1_93	-2.9	3.5	0.3	10.9	39.8	112.1	2.911	1.33	0.116	0.37	5.515	1.39	0.343	*1.33*	0.963
Siam1_94	183.8	2.0	0.2	5.5	23.1	56.7	2.547	1.28	0.133	0.48	7.200	1.36	0.393	*1.28*	0.937

Siam1_95	210.6	1.4	0.1	4.4	16.2	45.8	2.923	1.44	0.117	0.83	5.496	1.66	0.342	*1.44*	0.866
Siam1_96	36.1	3.2	0.4	9.0	36.4	92.6	2.605	1.35	0.134	0.32	7.088	1.39	0.384	*1.35*	0.972
Siam1_97	5.9	5.9	0.9	12.8	67.1	132.0	2.026	1.30	0.181	0.21	12.324	1.32	0.494	*1.30*	0.987
Siam1_98	442.1	8.5	1.4	16.9	96.5	174.3	1.848	1.33	0.194	0.14	14.475	1.34	0.541	*1.33*	0.994
Siam1_99	397.3	4.7	0.6	11.3	53.8	116.7	2.216	1.87	0.154	0.20	9.602	1.88	0.451	*1.87*	0.995
Siam1_100	401.4	2.5	0.3	6.9	28.0	71.4	2.581	1.65	0.133	0.43	7.130	1.71	0.387	*1.65*	0.968
Siam1_101	433.1	6.7	1.2	12.9	76.6	133.0	1.768	1.38	0.211	0.19	16.488	1.40	0.566	*1.38*	0.991
Siam1_102	58.6	9.5	0.9	31.0	108.5	319.5	3.003	1.54	0.115	0.19	5.261	1.55	0.333	*1.54*	0.992
Siam1_103	213.8	1.5	0.2	4.1	16.6	42.6	2.607	1.35	0.133	0.73	7.008	1.54	0.384	*1.35*	0.881
Siam1_104	406.3	1.3	0.1	3.6	14.5	36.6	2.581	1.47	0.133	0.74	7.106	1.65	0.387	*1.47*	0.893
Siam1_105	294.0	3.7	0.4	11.4	42.5	117.4	2.815	1.39	0.120	0.33	5.882	1.43	0.355	*1.39*	0.973
Siam1_106	99.1	2.0	0.2	5.5	22.4	56.6	2.571	1.32	0.133	0.56	7.127	1.43	0.389	*1.32*	0.921
Siam1_107	1080.2	6.8	0.9	30.3	77.0	312.3	4.064	3.39	0.153	2.10	5.187	3.99	0.246	3.39	0.850
Siam1_108	117.4	0.9	0.1	2.4	10.0	24.8	2.468	1.23	0.131	1.06	7.316	1.62	0.405	1.23	0.759
Siam1_109	171.7	0.3	0.0	0.8	3.4	8.4	2.513	1.49	0.136	2.43	7.435	2.85	0.398	1.49	0.522
Siam1_110	-115.2	1.0	0.1	2.8	11.4	28.6	2.536	1.38	0.136	1.15	7.398	1.80	0.394	1.38	0.769
Siam1_111	-59.3	6.0	0.6	19.1	68.4	197.1	2.917	1.40	0.115	0.24	5.442	1.43	0.343	1.40	0.985
Siam1_112	89.0	3.6	0.6	7.4	40.7	76.5	1.897	1.63	0.187	0.36	13.588	1.67	0.527	1.63	0.976
Siam1_113	89.2	9.9	1.0	32.2	112.5	331.8	2.981	1.59	0.116	0.32	5.375	1.62	0.336	1.59	0.981
Siam1_114	-113.2	1.7	0.3	3.5	19.4	36.2	1.886	1.51	0.190	0.42	13.892	1.57	0.530	1.51	0.964
Siam1_115	-26.2	1.3	0.1	4.1	14.9	42.6	2.886	1.77	0.119	0.78	5.666	1.93	0.346	1.77	0.914
Siam1_116	237.8	2.5	0.4	5.2	28.6	53.4	1.889	1.58	0.188	0.36	13.686	1.62	0.529	1.58	0.975
Siam1_86	14.8	3.3	0.5	6.6	37.0	68.1	1.853	1.54	0.190	0.30	14.153	1.57	0.540	*1.54*	0.981
Siam1_72	10.2	1.0	0.1	2.7	11.0	27.4	2.502	1.90	0.132	0.96	7.288	2.13	0.400	*1.90*	0.892
Siam1_73	-167.9	4.7	0.5	14.7	53.1	151.6	2.872	1.66	0.117	0.29	5.636	1.69	0.348	*1.66*	0.985
Siam1_74	-24.2	5.9	0.6	19.2	67.6	198.3	2.943	2.18	0.118	0.24	5.525	2.20	0.340	*2.18*	0.994
Siam1_75	162.2	5.5	1.2	9.4	62.4	97.3	1.567	1.84	0.255	0.29	22.460	1.86	0.638	*1.84*	0.988
Siam1_76	330.8	2.8	0.3	8.6	31.9	88.8	2.799	1.48	0.117	0.43	5.784	1.54	0.357	*1.48*	0.960
Siam1_77	244.3	2.5	0.2	8.2	28.7	84.5	2.959	1.57	0.115	0.49	5.365	1.64	0.338	*1.57*	0.954
Siam1_78	113.6	1.6	0.2	4.5	18.3	46.0	2.522	1.55	0.134	0.62	7.319	1.67	0.396	*1.55*	0.929
Siam1_79	670.7	3.5	0.5	7.2	39.7	74.7	1.870	1.35	0.188	0.30	13.850	1.38	0.535	*1.35*	0.976
Siam1_80	355.1	1.4	0.2	4.0	16.4	41.2	2.518	1.42	0.133	0.82	7.302	1.64	0.397	*1.42*	0.864
Siam1_31	161.0	1.4	0.1	4.4	16.3	45.8	2.818	1.54	0.115	0.72	5.624	1.70	0.355	*1.54*	0.905
Siam1_32	356.5	2.6	0.4	5.7	29.7	59.1	1.997	1.40	0.169	0.43	11.701	1.46	0.501	*1.40*	0.957

Siam1_33	0.1	0.9	0.1	2.3	9.8	23.9	2.445	1.50	0.132	1.07	7.462	1.84	0.409	*1.50*	0.816
Siam1_34	225.3	0.7	0.1	1.5	7.4	15.0	2.020	1.59	0.161	1.05	10.994	1.91	0.495	*1.59*	0.836
Siam1_35	365.2	2.7	0.3	8.3	30.4	85.8	2.833	1.59	0.117	0.50	5.714	1.67	0.353	*1.59*	0.954
Siam1_36	389.4	2.2	0.4	4.5	25.5	46.3	1.818	1.48	0.195	0.34	14.771	1.52	0.550	*1.48*	0.974
Siam1_37	577.6	7.0	1.1	15.0	80.2	154.4	1.930	1.69	0.187	0.20	13.380	1.71	0.518	*1.69*	0.993
Siam1_38	266.4	6.3	0.6	19.9	71.3	205.5	2.888	1.45	0.117	0.24	5.571	1.47	0.346	*1.45*	0.986
Siam1_39	245.4	1.3	0.1	3.8	14.4	39.3	2.742	1.47	0.125	0.79	6.278	1.67	0.365	*1.47*	0.880
Siam1_40	214.9	0.4	0.0	1.2	4.9	12.0	2.446	1.66	0.131	1.85	7.405	2.49	0.409	*1.66*	0.669
Siam1_41	196.2	4.4	0.4	14.1	50.5	144.8	2.871	1.48	0.116	0.32	5.561	1.51	0.348	*1.48*	0.977
Siam1_42	145.5	5.9	0.6	19.2	67.5	197.8	2.935	1.41	0.113	0.26	5.315	1.43	0.341	*1.41*	0.983
Siam1_44	298.3	7.2	1.1	15.0	82.5	154.2	1.874	1.61	0.187	0.16	13.733	1.61	0.534	*1.61*	0.995
Siam1_45	-44.5	2.2	0.2	6.0	24.8	61.4	2.480	1.59	0.134	0.45	7.431	1.65	0.403	*1.59*	0.963
Siam1_46	262.7	0.9	0.1	2.5	10.3	25.5	2.493	1.68	0.133	0.94	7.363	1.92	0.401	*1.68*	0.872
Siam1_47	1299.1	9.1	1.4	38.4	103.0	395.4	3.840	4.39	0.180	0.73	6.474	4.45	0.260	*4.39*	0.987
Siam1_48	412.3	2.6	0.3	7.2	29.7	74.3	2.502	1.68	0.133	0.46	7.302	1.74	0.400	*1.68*	0.964
Siam1_49	38.3	2.6	0.3	7.8	29.3	80.6	2.753	1.79	0.121	0.55	6.053	1.87	0.363	*1.79*	0.956
Siam1_50	142.0	1.0	0.1	3.1	11.2	32.2	2.877	1.81	0.116	1.00	5.547	2.06	0.348	*1.81*	0.876
Siam1_51	23.8	3.7	0.4	12.0	42.5	123.7	2.926	1.44	0.128	0.90	6.038	1.70	0.342	*1.44*	0.847
Siam1_52	-102.4	1.8	0.3	3.7	20.9	37.8	1.815	1.83	0.194	0.52	14.704	1.90	0.551	*1.83*	0.962
Siam1_53	-104.7	1.1	0.1	3.1	13.0	31.7	2.421	1.33	0.135	0.83	7.682	1.57	0.413	*1.33*	0.848
Siam1_54	-115.7	3.0	0.3	9.5	34.0	97.4	2.874	1.85	0.116	0.47	5.576	1.91	0.348	*1.85*	0.969
Siam1_55	-122.9	4.3	0.5	11.0	48.7	112.9	2.325	2.10	0.146	0.33	8.649	2.12	0.430	*2.10*	0.988
Siam1_56	44.8	2.9	0.5	6.1	33.3	62.7	1.890	2.04	0.189	0.35	13.801	2.07	0.529	*2.04*	0.986
Siam1_57	47.9	0.9	0.1	2.4	9.7	25.1	2.560	2.20	0.132	1.01	7.114	2.42	0.391	*2.20*	0.909
Siam1_59	-37.8	5.9	0.9	12.2	66.7	125.4	1.891	1.49	0.190	0.19	13.836	1.51	0.529	*1.49*	0.992
Siam1_60	92.9	8.2	0.8	31.5	93.0	324.6	3.444	4.64	0.119	0.80	4.756	4.70	0.290	*4.64*	0.985
Siam1_ex2a	124.0	0.8	0.1	2.8	10.1	28.8	2.896	2.01	**0.118**	1.30	5.614	2.39	0.345	2.01	0.840
Siam1_ex2b	-37.0	1.0	0.1	3.5	12.8	36.1	2.869	2.00	**0.117**	1.13	5.612	2.29	0.349	2.00	0.871
Siam1_ex2c	112.2	0.8	0.1	2.8	10.0	28.7	2.906	1.89	**0.116**	1.22	5.520	2.25	0.344	1.89	0.839
Siam1_ex2d	421.3	1.3	0.1	4.6	16.7	47.8	2.903	2.05	**0.116**	0.82	5.528	2.21	0.344	2.05	0.929
Siam1_ex3a	122.7	2.4	0.3	7.3	31.2	75.6	2.463	2.03	**0.134**	0.50	7.528	2.09	0.406	2.03	0.972
Siam1_ex3b	24.4	2.0	0.2	5.9	25.0	61.6	2.502	1.98	**0.135**	0.54	7.421	2.06	0.400	1.98	0.965
Siam1_ex3c	48.2	2.0	0.2	5.9	25.0	61.7	2.511	2.04	**0.136**	0.77	7.458	2.18	0.398	2.04	0.935
Siam1_ex3d	192.0	0.5	0.1	1.4	6.0	14.5	2.467	1.98	**0.135**	1.61	7.537	2.55	0.405	1.98	0.776

Siam1_ex3e	-57.8	0.6	0.1	2.8	7.4	29.3	3.968	3.75	**0.131**	1.68	4.552	4.11	0.252	3.75	0.913
Siam1_ex3f	-153.8	0.8	0.1	2.6	10.8	26.5	2.501	2.20	**0.138**	1.08	7.596	2.45	0.400	2.20	0.897
Siam1_ex4	232.6	3.5	0.4	13.0	44.8	135.0	3.058	2.48	**0.119**	0.75	5.369	2.59	0.327	2.48	0.957
Siam1_ex5	92.3	2.4	0.3	5.9	30.1	60.8	2.055	2.04	**0.168**	0.37	11.252	2.07	0.487	2.04	0.984
Siam1_ex6a	310.7	1.4	0.2	4.2	18.0	43.8	2.446	1.90	**0.133**	0.68	7.518	2.02	0.409	1.90	0.941
Siam1_ex6b	308.3	1.8	0.2	5.5	23.2	57.2	2.505	2.11	**0.133**	0.55	7.335	2.18	0.399	2.11	0.968
Siam1_ex6c	57.6	1.7	0.2	5.1	21.5	53.0	2.509	2.01	**0.133**	0.71	7.295	2.13	0.399	2.01	0.944
Siam1_ex6d	224.3	0.6	0.1	1.7	7.2	17.8	2.517	2.41	**0.134**	1.45	7.352	2.81	0.397	2.41	0.857
Siam1_ex7a	1490.1	9.4	2.0	26.2	119.9	272.6	2.238	5.06	**0.249**	1.37	15.315	5.24	0.447	5.06	0.965
Siam1_ex7b	44.5	0.7	0.1	2.0	9.5	21.0	2.247	1.95	**0.191**	0.83	11.741	2.12	0.445	1.95	0.920
Siam1_ex7c	175.9	1.5	0.2	3.5	19.1	36.4	1.927	2.16	**0.185**	0.49	13.234	2.22	0.519	2.16	0.975
Siam1_ex7d	-80.6	3.5	0.6	8.2	45.1	84.8	1.911	2.15	**0.187**	0.26	13.498	2.16	0.523	2.15	0.993
Siam1_ex8a	37.1	1.6	0.2	4.8	19.9	50.3	2.560	2.01	**0.133**	0.70	7.145	2.12	0.391	2.01	0.945
Siam1_ex8b	106.6	2.9	0.3	8.9	36.5	92.1	2.560	1.99	**0.133**	0.41	7.159	2.03	0.391	1.99	0.980
Siam1_ex8c	53.3	0.8	0.1	3.2	10.4	33.0	3.186	3.32	**0.153**	2.03	6.624	3.89	0.314	3.32	0.853
Siam1_ex9a	-284.2	1.1	0.1	3.3	13.4	33.9	2.563	2.23	**0.132**	0.85	7.093	2.39	0.390	2.23	0.934
Siam1_ex9b	165.4	1.7	0.2	5.3	21.8	55.4	2.574	2.14	**0.132**	0.64	7.095	2.23	0.388	2.14	0.958
Siam1_ex10a	220.3	7.9	1.7	15.7	100.5	162.7	1.625	2.22	**0.262**	0.10	22.194	2.22	0.615	2.22	0.999
Siam1_ex10b	-84.6	2.3	0.3	7.0	28.9	73.2	2.572	2.10	**0.132**	0.54	7.093	2.17	0.389	2.10	0.969
Siam1_ex11a	-131.3	1.9	0.2	5.9	24.7	61.3	2.522	2.15	**0.132**	0.52	7.226	2.21	0.397	2.15	0.972
Siam1_ex11b	122.2	0.6	0.1	1.9	7.8	19.7	2.575	1.97	**0.133**	1.37	7.106	2.40	0.388	1.97	0.821
Siam1_ex11c	330.1	1.7	0.2	6.3	22.3	65.9	3.001	2.23	**0.116**	0.59	5.307	2.30	0.333	2.23	0.967
Siam1_ex12	463.4	5.8	0.9	14.5	73.8	150.3	2.062	2.23	**0.180**	0.26	12.011	2.25	0.485	2.23	0.993
Siam1_ex13	232.9	1.7	0.3	4.5	22.1	46.3	2.128	2.09	**0.190**	0.47	12.332	2.15	0.470	2.09	0.975
Siam1_ex14	235.2	4.6	0.5	14.3	59.2	148.5	2.558	2.06	**0.132**	0.34	7.112	2.08	0.391	2.06	0.986
Siam1_ex15	-259.5	1.5	0.2	3.5	19.7	36.7	1.890	1.94	**0.191**	0.53	13.930	2.01	0.529	1.94	0.964
Siam1_ex16a	257.6	2.1	0.3	5.2	26.9	54.4	2.069	1.91	**0.193**	0.34	12.873	1.94	0.483	1.91	0.985
Siam1_ex16b	7.7	0.6	0.1	1.3	7.4	13.4	1.853	2.09	**0.194**	1.04	14.462	2.33	0.540	2.09	0.896
CS11-6_1	244.2	4.3	0.3	20.6	62.6	238.9	3.868	1.32	0.090	0.50	3.223	1.41	0.259	*1.32*	0.935
CS11-6_2	**325.3**	7.9	0.6	48.8	114.0	566.7	4.959	3.14	0.085	0.56	2.352	3.19	0.202	*3.14*	0.985
CS11-6_3	154.7	4.3	0.4	16.4	62.5	190.9	3.076	1.37	0.111	0.50	4.974	1.46	0.325	*1.37*	0.939
CS11-6_4	139.3	2.1	0.2	9.6	30.1	110.9	3.732	1.26	0.094	0.65	3.461	1.42	0.268	*1.26*	0.890
CS11-6_5	2.3	4.5	0.3	23.6	64.3	274.5	4.378	1.42	0.088	0.50	2.778	1.51	0.228	*1.42*	0.943

CS11-6_7	-75.6	9.5	0.8	36.9	136.6	428.7	3.185	1.08	0.107	0.50	4.618	1.19	0.314	*1.08*	0.908
CS11-6_8	-60.2	3.9	0.6	10.1	56.9	117.4	2.095	1.09	0.170	0.50	11.187	1.20	0.477	*1.09*	0.910
CS11-6_9	221.6	5.7	0.4	31.5	81.6	365.5	4.548	1.21	0.085	0.50	2.563	1.31	0.220	*1.21*	0.924
CS11-6_10	-238.5	2.6	0.2	15.2	36.9	176.6	4.856	1.06	0.078	0.63	2.224	1.23	0.206	*1.06*	0.861
CS11-6_11	174.3	3.2	0.4	9.0	45.5	105.0	2.359	0.98	0.163	0.50	9.542	1.10	0.424	*0.98*	0.891
CS11-6_12	235.2	2.0	0.2	8.3	29.3	96.0	3.327	1.19	0.106	0.67	4.375	1.36	0.301	*1.19*	0.872
CS11-6_13	134.6	0.8	0.1	**4.0**	11.2	46.0	4.126	1.03	0.088	1.63	2.944	1.93	0.242	*1.03*	0.533
CS11-6_14	228.2	2.1	0.1	11.7	30.3	135.6	4.543	1.06	0.084	0.69	2.537	1.26	0.220	*1.06*	0.840
CS11-6_15	**424.0**	2.0	0.1	12.4	29.1	144.3	5.039	1.10	0.078	0.76	2.130	1.34	0.198	*1.10*	0.825
CS11-6_16	**372.4**	5.2	0.4	24.9	74.8	288.7	3.933	1.45	0.090	0.50	3.155	1.54	0.254	*1.45*	0.946
CS11-6_17	**372.5**	5.3	0.4	30.9	77.0	358.6	4.717	1.86	0.084	0.57	2.462	1.94	0.212	*1.86*	0.955
CS11-6_18	**861.7**	8.3	0.7	47.3	119.1	549.4	4.673	1.64	0.096	4.39	2.823	4.69	0.214	*1.64*	0.349
CS11-6_19	**511.0**	1.2	0.1	5.8	17.2	67.7	3.993	1.44	0.097	1.01	3.365	1.76	0.250	*1.44*	0.818
CS11-6_20	**471.5**	7.3	1.0	17.7	104.6	204.9	2.022	1.56	0.171	0.50	11.629	1.64	0.495	*1.56*	0.953
CS11-6_21	-46.0	1.5	0.1	8.5	21.1	98.8	4.756	1.24	0.086	1.01	2.483	1.60	0.210	*1.24*	0.774
CS11-6_22	-103.1	8.0	0.6	35.4	115.9	411.4	3.620	1.59	0.097	0.50	3.676	1.66	0.276	*1.59*	0.954
CS11-6_24	-250.2	2.8	0.2	12.8	39.8	148.4	3.780	1.54	0.095	0.53	3.481	1.63	0.265	*1.54*	0.945
CS11-6_25	192.0	5.0	0.4	22.7	71.6	263.4	3.735	1.53	0.096	0.50	3.525	1.61	0.268	*1.53*	0.950
CS11-6_27	-64.4	12.3	1.1	49.7	177.3	577.1	3.308	1.92	0.108	0.50	4.512	1.98	0.302	*1.92*	0.968
CS11-6_28	241.5	1.2	0.1	5.0	16.6	57.9	3.541	1.33	0.100	1.03	3.880	1.68	0.282	*1.33*	0.791
CS11-6_29	97.3	2.4	0.2	12.0	34.6	139.3	4.094	1.00	0.089	0.62	2.984	1.18	0.244	*1.00*	0.852
CS11-6_30	-115.4	7.3	0.6	30.0	105.2	347.8	3.375	1.37	0.102	0.50	4.149	1.46	0.296	*1.37*	0.940
CS11-6_31	201.5	2.2	0.1	15.0	31.6	173.8	5.581	0.98	0.074	0.82	1.830	1.28	0.179	*0.98*	0.768
CS11-6_32	83.4	3.4	0.3	13.8	49.1	160.4	3.316	1.28	0.105	0.50	4.356	1.38	0.302	*1.28*	0.932
CS11-6_34	-44.7	2.7	0.2	14.4	39.4	167.6	4.320	1.55	0.086	0.53	2.729	1.64	0.231	*1.55*	0.946
CS11-6_35	-101.5	3.8	0.3	18.5	54.7	214.3	3.977	1.31	0.091	0.50	3.146	1.40	0.251	*1.31*	0.934
CS11-6_36	4.3	2.2	0.2	12.5	31.0	145.0	4.733	1.38	0.094	1.21	2.727	1.84	0.211	*1.38*	0.751
CS11-6_37	-185.6	2.1	0.1	12.6	29.7	145.7	4.855	1.03	0.081	0.74	2.295	1.27	0.206	*1.03*	0.812
CS11-6_38	161.5	4.0	0.4	15.1	57.5	175.5	3.099	1.28	0.113	0.50	5.031	1.38	0.323	*1.28*	0.932
CS11-6_39	-107.2	2.5	0.2	13.2	36.3	153.1	4.284	1.40	0.087	0.61	2.785	1.53	0.233	*1.40*	0.917
CS11-6_40	78.9	4.4	0.3	24.3	62.7	281.7	4.561	1.46	0.083	0.50	2.502	1.54	0.219	*1.46*	0.946
CS11-6_41	**314.4**	3.4	0.3	15.4	48.8	179.0	3.741	1.53	0.095	0.50	3.492	1.61	0.267	*1.53*	0.950
CS11-6_42	184.9	3.8	0.3	15.0	55.3	173.7	3.186	1.12	0.108	0.50	4.680	1.23	0.314	*1.12*	0.913
CS11-5_45	-74.3	1.5	0.1	8.7	21.3	101.4	4.827	1.15	0.082	0.92	2.348	1.47	0.207	*1.15*	0.782

CS11-5_46	-53.8	1.8	0.2	5.9	25.4	68.9	2.756	1.17	0.121	0.59	6.077	1.31	0.363	*1.17*	0.892
CS11-5_47	156.1	2.9	0.2	16.5	41.5	191.7	4.681	1.37	0.082	0.56	2.407	1.48	0.214	1.37	0.925
CS11-5_48	69.8	2.8	0.5	5.8	39.8	67.7	1.724	1.46	0.215	0.50	17.197	1.54	0.580	1.46	0.946
CS11-5_50	86.0	6.9	0.5	39.6	99.4	459.3	4.665	1.23	**0.082**	0.50	2.411	1.32	0.214	1.23	0.926
CS11-5_51	146.5	3.6	0.3	16.1	51.3	186.6	3.687	1.20	**0.095**	0.57	3.534	1.33	0.271	1.20	0.904
CS11-6_53	187.2	3.9	0.3	18.9	55.5	219.9	4.016	1.51	**0.091**	0.50	3.132	1.59	0.249	1.51	0.949
CS11-6_54	36.4	7.2	0.5	47.9	103.5	556.3	5.406	1.88	**0.080**	0.50	2.032	1.94	0.185	1.88	0.966
CS11-6_55	457.5	4.5	0.4	20.4	64.7	237.3	3.722	1.26	**0.115**	3.06	4.248	3.31	0.269	1.26	**0.380**
CS11-6_56	169.2	5.7	0.6	21.1	82.5	245.0	3.015	1.47	**0.119**	0.50	5.463	1.56	0.332	1.47	0.947
CS11-6_57	-61.1	1.4	0.1	5.3	20.5	61.5	3.052	0.95	**0.111**	0.75	5.009	1.21	0.328	0.95	0.786
CS11-6_58	207.7	3.1	0.3	11.7	44.8	135.8	3.077	1.09	**0.110**	0.50	4.944	1.20	0.325	1.09	0.908
CS11-6_59	352.7	3.6	0.3	18.9	51.5	219.9	4.334	1.18	**0.088**	0.50	2.787	1.28	0.231	1.18	0.921
CS11-6_60	201.9	2.0	0.2	9.8	29.1	114.3	3.985	1.14	**0.093**	0.72	3.225	1.35	0.251	1.14	0.844
CS11-6_61	169.2	2.1	0.1	12.0	30.3	139.7	4.662	1.10	**0.083**	0.74	2.454	1.32	0.214	1.10	0.830
CS11-6_63	235.9	0.3	0.0	1.2	**3.8**	13.9	3.726	1.49	**0.092**	3.74	3.416	4.03	0.268	1.49	**0.371**
CS11-6_64	135.6	6.4	0.4	39.0	91.8	452.8	5.033	1.28	**0.081**	0.50	2.213	1.37	0.199	1.28	0.931
CS11-5_1	-33.9	0.6	0.0	2.5	8.1	28.6	3.595	1.24	**0.092**	1.91	3.541	2.27	0.278	1.24	**0.544**
CS11-5_2	36.7	5.9	0.5	25.9	84.5	300.9	3.602	1.83	**0.105**	0.50	4.008	1.90	0.278	1.83	0.965
CS11-5_3	-243.7	3.4	0.3	16.2	48.5	188.3	3.936	1.16	**0.092**	0.50	3.220	1.26	0.254	1.16	0.918
CS11-5_4	-299.0	7.6	0.7	27.9	109.1	323.8	3.008	1.45	**0.112**	0.50	5.118	1.53	0.332	1.45	0.945
CS11-5_5	-266.8	10.6	1.1	38.3	152.8	444.8	2.956	0.99	**0.119**	0.50	5.570	1.11	0.338	0.99	0.892
CS11-5_6	219.8	4.5	0.4	20.2	64.6	234.1	3.683	1.12	**0.093**	0.50	3.499	1.23	0.272	1.12	0.914
CS11-5_7	30.6	10.3	1.1	31.2	149.2	362.0	2.465	1.52	**0.130**	0.50	7.266	1.60	0.406	1.52	0.950
CS11-5_8	85.0	3.1	0.2	19.8	45.0	229.4	5.176	1.15	**0.078**	0.57	2.082	1.29	0.193	1.15	0.895
CS11-5_11	-264.2	6.5	1.2	14.0	93.5	162.7	1.751	1.07	**0.226**	0.50	17.810	1.18	0.571	1.07	0.906
CS11-5_12	-152.7	7.7	0.7	30.3	111.1	352.2	3.184	1.35	**0.106**	0.50	4.577	1.44	0.314	1.35	0.938
CS11-5_13	-105.7	6.8	0.6	30.7	97.9	356.0	3.689	1.48	**0.104**	0.50	3.875	1.57	0.271	1.48	0.948
CS11-5_14	-437.8	3.2	0.5	7.3	46.0	84.6	1.854	0.93	**0.198**	0.50	14.742	1.06	0.540	0.93	0.882
CS11-5_15	-408.4	3.3	0.2	20.0	47.0	232.3	5.002	1.39	**0.080**	0.50	2.209	1.48	0.200	1.39	0.941
CS11-5_16	-154.7	3.1	0.3	12.0	44.9	139.1	3.175	0.97	**0.107**	0.50	4.653	1.09	0.315	0.97	0.889
CS11-5_17	-63.2	4.0	0.3	18.4	57.1	213.5	3.796	1.19	**0.093**	0.50	3.384	1.29	0.263	1.19	0.922
CS11-5_18	-204.8	2.1	0.1	13.3	30.6	154.8	5.138	0.99	**0.078**	0.71	2.082	1.22	0.195	0.99	0.814
CS11-5_20	-217.3	4.5	0.3	30.9	64.5	359.2	5.625	1.74	**0.082**	0.50	2.010	1.81	0.178	1.74	0.961
CS11-5_21	-115.9	3.6	0.3	15.1	51.6	175.5	3.448	1.19	**0.099**	0.50	3.962	1.29	0.290	1.19	0.921

CS11-5_22	-92.4	1.6	0.1	7.4	23.1	86.2	3.782	1.16	**0.095**	0.84	3.446	1.43	0.264	1.16	0.812
CS11-5_23	42.3	8.2	1.0	29.9	117.8	347.1	2.976	2.17	**0.152**	0.50	7.041	2.22	0.336	2.17	0.974
CS11-5_24	309.1	4.9	0.4	18.5	70.5	214.3	3.085	1.17	**0.109**	0.50	4.882	1.27	0.324	1.17	0.919
CS11-5_26	143.1	0.4	0.0	2.5	5.9	29.5	5.097	1.11	**0.078**	2.98	2.116	3.18	0.196	1.11	**0.348**
CS11-5_27	-74.9	13.2	1.2	50.2	189.8	582.5	3.114	1.15	**0.110**	0.50	4.862	1.26	0.321	1.15	0.917
CS11-5_29	280.1	3.0	0.2	13.6	42.8	158.1	3.748	0.96	**0.094**	0.52	3.466	1.09	0.267	0.96	0.881
CS11-5_33	218.8	5.3	0.5	18.2	76.3	211.0	2.806	1.05	**0.121**	0.50	5.926	1.16	0.356	1.05	0.903
CS11-5_34	-11.9	0.6	0.1	2.7	8.8	31.7	3.687	1.25	**0.098**	1.76	3.660	2.16	0.271	1.25	**0.581**
CS11-5_35	23.7	1.6	0.1	8.2	23.5	95.3	4.021	1.35	**0.091**	1.11	3.125	1.74	0.249	1.35	0.772
CS11-5_36	-241.7	2.7	0.2	12.8	38.6	148.5	3.908	0.89	**0.093**	0.51	3.278	1.03	0.256	0.89	0.866
CS11-5_37	49.7	5.8	0.4	30.6	83.6	355.1	4.313	1.15	**0.085**	0.50	2.726	1.25	0.232	1.15	0.917
CS11-5_38	37.4	2.8	0.2	16.0	40.8	185.8	4.588	1.06	**0.093**	0.53	2.787	1.19	0.218	1.06	0.896
CS11-5_39	-88.1	1.7	0.1	9.4	24.1	109.4	4.567	0.92	**0.083**	0.89	2.508	1.28	0.219	0.92	**0.722**
CS11-5_40	31.6	5.2	0.5	19.4	75.4	225.5	3.033	1.24	**0.110**	0.50	5.001	1.34	0.330	1.24	0.928
CS11-5_41	-88.4	4.3	0.4	17.0	61.6	197.0	3.255	1.07	**0.107**	0.50	4.550	1.18	0.307	1.07	0.906
CS11-5_42	55.0	0.8	0.1	5.7	11.5	66.1	5.801	1.26	**0.074**	1.72	1.770	2.13	0.172	1.26	**0.591**
CS11-5_43	-207.2	3.4	0.3	13.3	48.5	153.9	3.216	1.38	**0.106**	0.50	4.546	1.47	0.311	1.38	0.941
CS11-5_45	113.7	3.4	0.3	13.0	48.7	151.1	3.187	1.21	**0.112**	0.50	4.827	1.31	0.314	1.21	0.924
CS11-5_46	-74.1	1.8	0.1	8.1	25.5	93.7	3.726	2.01	**0.096**	0.77	3.561	2.16	0.268	2.01	0.934
CS11-5_47	223.3	2.7	0.3	9.0	38.3	105.0	2.787	1.00	**0.122**	0.50	6.049	1.12	0.359	1.00	0.894
CS11-5_48	2.6	2.5	0.2	14.8	35.8	171.9	4.932	1.19	**0.091**	0.58	2.544	1.33	0.203	1.19	0.899
CS11-5_50	371.1	5.9	0.5	22.7	85.3	264.0	3.144	0.89	**0.110**	0.21	4.829	0.92	0.318	0.89	0.974
CS11-5_52	47.5	10.2	1.6	23.7	146.3	275.6	1.912	0.96	**0.187**	0.14	13.488	0.97	0.523	0.96	0.990
CS11-5_54	314.7	1.1	0.1	5.6	15.7	64.9	4.189	0.91	**0.090**	1.14	2.975	1.46	0.239	0.91	**0.623**
CS11-5_55	-46.7	2.6	0.2	14.4	37.0	167.0	4.570	1.85	**0.084**	0.56	2.524	1.94	0.219	1.85	0.957
CS11-5_56	218.6	1.8	0.1	9.1	25.6	105.9	4.248	1.09	**0.093**	0.78	3.030	1.34	0.235	1.09	0.813
CS11-5_57	-19.7	1.4	0.1	8.4	19.7	97.6	4.995	0.97	**0.080**	1.06	2.208	1.44	0.200	0.97	**0.673**
CS11-5_58	-151.8	6.8	0.6	28.3	98.7	328.7	3.347	1.34	**0.106**	0.23	4.357	1.36	0.299	1.34	0.985
CS11-5_59	-155.6	3.9	0.4	15.0	56.6	174.0	3.117	1.48	**0.110**	0.37	4.857	1.53	0.321	1.48	0.970
CS11-9_1	264.7	0.4	0.0	2.5	4.7	25.1	5.476	1.45	**0.075**	3.42	1.881	3.71	0.183	1.45	**0.390**
CS11-9_2	300.3	1.1	0.1	7.6	14.0	76.2	5.536	1.39	**0.074**	1.42	1.851	1.99	0.181	1.39	**0.701**
CS11-9_3	166.6	3.4	0.2	21.6	42.6	218.0	5.207	1.32	**0.076**	0.48	2.017	1.41	0.192	1.32	0.941
CS11-9_4	3.2	1.4	0.1	9.3	17.0	93.4	5.598	1.24	**0.074**	1.13	1.824	1.68	0.179	1.24	**0.740**
CS11-9_5	129.7	0.4	0.0	3.5	4.8	35.6	7.486	1.49	**0.073**	3.33	1.341	3.65	0.134	1.49	**0.409**

CS11-9_6	125.0	0.4	0.0	2.8	5.2	28.4	5.531	1.45	**0.075**	2.97	1.864	3.31	0.181	1.45	**0.439**
CS11-9_7	103.9	0.2	0.0	1.1	**2.0**	11.1	5.625	1.89	**0.075**	6.97	1.843	7.22	0.178	1.89	**0.262**
CS11-9_8	212.8	1.5	0.1	10.3	18.9	103.8	5.568	1.49	**0.074**	0.99	1.843	1.79	0.180	1.49	0.833
CS11-9_9	298.7	0.3	0.0	2.1	4.2	20.9	5.054	1.53	**0.079**	3.60	2.164	3.91	0.198	1.53	**0.392**
CS11-9_10	68.4	0.6	0.0	4.3	8.0	42.9	5.491	1.39	**0.074**	2.20	1.868	2.61	0.182	1.39	**0.534**
CS11-9_11	-92.8	0.2	0.0	1.5	**2.8**	15.3	5.547	1.67	**0.076**	5.21	1.886	5.47	0.180	1.67	**0.305**
CS11-9_12	-365.4	0.4	0.0	2.6	4.8	26.1	5.488	1.59	**0.074**	3.22	1.860	3.59	0.182	1.59	**0.441**
CS11-9_13	-286.5	1.2	0.1	8.3	15.4	83.4	5.529	1.37	**0.074**	1.29	1.848	1.88	0.181	1.37	**0.726**
CS11-9_13	-286.5	1.2	0.1	8.3	15.4	83.4	5.529	1.37	**0.074**	1.29	1.848	1.88	0.181	1.37	**0.726**
CS11-9_14	-276.3	0.3	0.0	1.8	**3.5**	18.3	5.321	1.75	**0.074**	4.37	1.906	4.71	0.188	1.75	**0.371**
CS11-9_15	-242.4	0.5	0.0	3.4	6.3	34.1	5.527	1.31	**0.075**	2.57	1.869	2.89	0.181	1.31	**0.454**
CS11-9_16	-147.8	1.5	0.1	10.0	19.0	100.7	5.397	1.24	**0.075**	0.98	1.926	1.58	0.185	1.24	0.785
CS11-9_17	43.1	0.4	0.0	2.3	4.4	23.7	5.472	1.42	**0.075**	3.48	1.893	3.76	0.183	1.42	**0.377**
CS11-9_18	-23.5	0.6	0.0	3.8	7.2	38.8	5.479	1.24	**0.075**	2.35	1.880	2.66	0.183	1.24	**0.466**
CS11-9_19	172.8	0.6	0.0	3.7	7.0	37.3	5.382	1.25	**0.076**	2.25	1.945	2.57	0.186	1.25	**0.485**
CS11-9_20	124.7	2.2	0.1	13.4	27.0	135.8	5.119	1.48	**0.077**	0.68	2.081	1.63	0.195	1.48	0.909
CS11-9_21	301.8	0.5	0.0	3.3	6.3	33.5	5.407	1.76	**0.074**	2.64	1.896	3.18	0.185	1.76	**0.555**
CS11-9_22	76.0	0.6	0.0	3.9	7.5	39.9	5.464	1.39	**0.075**	2.24	1.891	2.64	0.183	1.39	**0.527**
CS11-9_23	354.2	0.3	0.0	2.0	**3.8**	20.4	5.397	1.51	**0.075**	4.01	1.917	4.28	0.185	1.51	**0.351**
CS11-9_24	354.6	1.8	0.1	11.9	22.6	120.2	5.409	2.19	**0.075**	0.92	1.914	2.38	0.185	2.19	0.923
CS11-9_25	486.6	0.5	0.0	3.2	6.1	32.1	5.422	1.36	**0.074**	2.64	1.892	2.97	0.184	1.36	**0.457**
CS11-9_26	318.5	0.2	0.0	1.3	**2.5**	13.4	5.444	1.81	**0.073**	5.80	1.858	6.08	0.184	1.81	**0.298**
CS11-9_27	452.9	1.0	0.1	6.6	12.7	66.4	5.327	1.35	**0.075**	1.48	1.939	2.01	0.188	1.35	**0.674**
CS11-9_28	100.5	0.2	0.0	1.3	**2.4**	12.9	5.423	1.69	**0.073**	5.99	1.868	6.23	0.184	1.69	**0.271**
CS11-9_29	318.9	1.2	0.1	7.5	14.4	75.7	5.340	1.35	**0.075**	1.28	1.936	1.87	0.187	1.35	**0.726**
CS11-9_30	296.8	0.2	0.0	1.2	**2.3**	12.2	5.497	1.82	**0.076**	6.15	1.914	6.42	0.182	1.82	**0.284**
CS11-9_31	-207.8	0.5	0.0	3.2	6.0	32.2	5.421	1.48	**0.075**	2.64	1.896	3.02	0.184	1.48	**0.488**
CS11-9_32	-230.2	0.5	0.0	3.4	6.4	34.3	5.395	1.30	**0.075**	2.61	1.915	2.92	0.185	1.30	**0.446**
CS11-9_33	-59.0	1.2	0.1	8.1	15.1	81.5	5.463	1.34	**0.078**	1.18	1.965	1.78	0.183	1.34	0.750
CS11-9_34	-109.8	0.7	0.0	4.9	9.0	49.9	5.633	1.43	**0.076**	1.80	1.860	2.30	0.178	1.43	**0.621**
CS11-9_35	-59.8	0.4	0.0	2.5	4.5	25.1	5.642	1.60	**0.074**	3.46	1.810	3.82	0.177	1.60	**0.420**
CS11-9_36	-133.5	0.3	0.0	2.1	**3.8**	20.7	5.453	1.28	**0.076**	3.86	1.930	4.06	0.183	1.28	**0.315**

CS11-9_37	-41.1	0.6	0.0	4.1	7.4	41.0	5.569	1.43	**0.075**	2.22	1.866	2.64	0.180	1.43	**0.540**
CS11-9_38	-207.6	0.6	0.0	4.2	8.0	42.8	5.466	1.62	**0.075**	2.04	1.902	2.60	0.183	1.62	**0.622**
CS11-9_39	-181.8	0.6	0.0	4.1	7.6	41.2	5.515	1.59	**0.076**	2.28	1.903	2.78	0.181	1.59	**0.572**
CS11-9_40	-140.5	1.8	0.1	11.7	21.8	117.8	5.491	1.36	**0.075**	0.90	1.882	1.64	0.182	1.36	0.833
CS11-9_41	112.5	1.7	0.1	11.4	21.1	115.0	5.581	1.46	**0.075**	0.95	1.857	1.74	0.179	1.46	0.837
CS11-9_42	302.8	0.2	0.0	1.3	**2.5**	13.6	5.512	1.52	**0.076**	5.71	1.905	5.91	0.181	1.52	**0.257**
CS11-9_43	428.0	0.2	0.0	1.2	**2.1**	12.0	5.716	1.61	**0.075**	6.66	1.814	6.85	0.175	1.61	**0.236**
CS11-9_44	146.7	1.0	0.1	6.8	12.5	68.9	5.592	1.32	**0.075**	1.40	1.839	1.92	0.179	1.32	**0.686**
CS11-9_45	2.3	2.8	0.2	19.5	34.9	196.7	5.729	1.47	**0.075**	0.61	1.798	1.59	0.175	1.47	0.924
CS11-9_46	78.0	0.3	0.0	2.3	**3.8**	22.9	6.081	1.50	**0.073**	4.03	1.664	4.30	0.164	1.50	**0.349**
CS11-9_47	-11.7	1.9	0.1	12.6	23.0	127.5	5.631	1.53	**0.076**	0.85	1.866	1.75	0.178	1.53	0.875
CS11-9_48	234.4	0.2	0.0	1.4	**2.6**	14.6	5.738	1.66	**0.075**	5.56	1.797	5.80	0.174	1.66	**0.285**
CS11-9_49	41.1	0.2	0.0	1.5	**2.8**	15.0	5.432	1.48	**0.077**	5.06	1.944	5.27	0.184	1.48	**0.280**
CS11-9_50	182.7	1.2	0.1	7.8	14.4	79.0	5.574	1.26	**0.076**	1.21	1.878	1.75	0.179	1.26	**0.722**
CS11-9_51	279.7	1.7	0.1	11.3	21.1	114.1	5.492	1.42	**0.075**	0.97	1.895	1.72	0.182	1.42	0.827
CS11-9_52	13.9	0.3	0.0	2.0	**3.8**	20.0	5.313	1.56	**0.078**	3.84	2.035	4.14	0.188	1.56	**0.377**
CS11-9_53	224.4	0.4	0.0	2.2	4.5	22.3	4.994	1.69	**0.080**	3.22	2.203	3.64	0.200	1.69	**0.465**
CS11-9_54	216.3	0.3	0.0	2.3	4.1	22.9	5.704	1.86	**0.076**	3.69	1.836	4.13	0.175	1.86	**0.450**
CS11-9_55	345.4	0.7	0.0	5.1	9.2	51.0	5.635	1.23	**0.076**	1.85	1.852	2.23	0.177	1.23	**0.554**
CS11-9_56	32.9	0.1	0.0	0.4	**0.8**	4.0	5.348	2.78	**0.076**	16.29	1.948	16.53	0.187	2.78	**0.168**
CS11-9_57	187.0	0.7	0.0	4.7	8.6	47.6	5.681	1.86	**0.076**	1.93	1.842	2.68	0.176	1.86	**0.692**
CS11-9_58	242.2	2.0	0.2	10.4	25.2	104.6	4.204	1.39	**0.091**	0.78	2.969	1.59	0.238	1.39	0.874
CS11-9_59	64.3	0.3	0.0	2.3	4.2	23.3	5.575	1.43	**0.078**	3.46	1.937	3.74	0.179	1.43	**0.381**
CS11-9_60	279.6	0.4	0.0	2.7	4.9	27.0	5.608	1.32	**0.075**	3.17	1.837	3.43	0.178	1.32	**0.384**
CS11-9_61	-6.2	0.6	0.0	3.9	7.5	39.9	5.376	1.72	**0.086**	3.26	2.211	3.68	0.186	1.72	**0.467**
CS11-9_62	131.0	1.2	0.1	7.9	14.9	80.0	5.441	1.26	**0.074**	1.25	1.885	1.77	0.184	1.26	**0.710**
CS11-9_63	19.9	1.6	0.1	9.1	19.5	91.5	4.773	1.28	**0.081**	0.87	2.350	1.54	0.210	1.28	0.825
CS11-9_64	76.4	0.3	0.0	1.9	**3.6**	19.5	5.482	1.62	**0.078**	4.06	1.959	4.37	0.182	1.62	**0.371**
CS11-9_65	-171.1	0.8	0.1	6.0	10.2	60.5	6.019	1.25	**0.077**	2.05	1.759	2.40	0.166	1.25	**0.518**
CS11-9_66	-10.2	0.9	0.1	5.8	10.8	59.0	5.527	1.24	**0.075**	1.58	1.877	2.01	0.181	1.24	**0.618**
CS11-9_67	-97.3	0.2	0.0	1.0	**1.9**	10.2	5.475	1.82	**0.076**	7.15	1.924	7.37	0.183	1.82	**0.246**
CS11-9_68	-59.6	0.7	0.0	4.6	8.4	46.3	5.614	1.32	**0.075**	1.99	1.849	2.39	0.178	1.32	**0.553**

CS11-9_69	136.3	0.5	0.0	3.2	6.5	32.2	5.071	1.34	**0.079**	2.41	2.149	2.75	0.197	1.34	**0.487**
CS11-9_70	-73.8	0.1	0.0	1.0	**1.8**	9.7	5.549	1.75	**0.078**	7.39	1.938	7.59	0.180	1.75	**0.230**
CS11-9_71	62.4	0.7	0.0	4.3	8.2	43.1	5.378	1.61	**0.077**	2.07	1.977	2.62	0.186	1.61	**0.614**
CS11-9_72	129.6	0.1	0.0	0.9	**1.7**	9.3	5.571	1.40	**0.075**	7.98	1.857	8.10	0.180	1.40	**0.172**
CS11-9_73	174.9	0.8	0.1	5.4	10.0	54.7	5.502	1.30	**0.076**	1.80	1.892	2.22	0.182	1.30	**0.586**
CS11-9_74	167.9	1.0	0.1	6.7	12.2	67.6	5.576	1.56	**0.075**	1.47	1.850	2.14	0.179	1.56	**0.728**
CS11-9_75	175.2	2.1	0.2	9.7	25.7	98.3	3.891	1.45	**0.094**	0.61	3.319	1.57	0.257	1.45	0.921
CS11-9_76	-31.2	0.9	0.1	6.0	11.1	61.0	5.615	1.29	**0.075**	1.65	1.851	2.09	0.178	1.29	**0.617**
CS11-9_77	73.2	0.6	0.0	3.8	6.9	38.2	5.615	1.34	**0.075**	2.29	1.841	2.66	0.178	1.34	**0.506**
CS11-9_78	141.5	0.8	0.1	5.7	10.4	57.6	5.613	1.46	**0.075**	1.63	1.839	2.19	0.178	1.46	**0.666**
CS11-9_79	38.7	0.7	0.0	4.6	8.5	46.5	5.559	1.49	**0.076**	1.96	1.882	2.46	0.180	1.49	**0.604**
CS11-9_80	-90.3	0.2	0.0	1.5	**3.0**	14.9	5.001	1.41	**0.081**	4.63	2.225	4.84	0.200	1.41	**0.291**
CS11-9_81	102.2	0.4	0.0	2.9	5.3	29.1	5.630	1.37	**0.076**	3.14	1.858	3.42	0.178	1.37	**0.401**
CS11-9_82	20.6	1.2	0.1	7.8	14.7	78.6	5.461	1.51	**0.075**	1.30	1.904	2.00	0.183	1.51	0.757
CS11-9_83	313.4	0.2	0.0	1.3	**2.4**	12.9	5.634	1.34	**0.075**	6.00	1.826	6.15	0.178	1.34	**0.219**
CS11-9_84	102.7	0.1	0.0	0.7	**1.4**	7.4	5.385	1.84	**0.075**	9.57	1.919	9.75	0.186	1.84	**0.189**
CS11-9_85	5.3	0.3	0.0	1.9	**3.7**	19.5	5.354	1.38	**0.076**	4.11	1.957	4.33	0.187	1.38	**0.319**
CS11-9_86	258.6	0.4	0.0	2.9	5.4	29.2	5.540	1.49	**0.075**	2.89	1.878	3.25	0.181	1.49	**0.457**
CS11-9_87	216.9	0.9	0.1	6.2	11.5	62.7	5.553	1.37	**0.075**	1.77	1.855	2.24	0.180	1.37	**0.611**
CS11-9_88	443.1	0.3	0.0	1.8	**3.2**	17.8	5.591	1.37	**0.077**	4.49	1.887	4.69	0.179	1.37	**0.292**
CS11-9_89	464.7	1.3	0.1	9.0	16.5	91.3	5.593	1.40	**0.075**	1.15	1.854	1.81	0.179	1.40	0.772
CS11-9_90	219.1	0.8	0.1	5.3	9.7	53.4	5.605	1.37	**0.076**	1.73	1.864	2.21	0.178	1.37	**0.621**
CS11-9_91	-5.9	0.5	0.0	3.5	6.4	35.1	5.562	1.32	**0.074**	2.49	1.839	2.82	0.180	1.32	**0.467**
CS11-9_92	220.5	0.1	0.0	1.0	**1.8**	9.8	5.569	1.43	**0.073**	7.74	1.817	7.87	0.180	1.43	**0.181**
CS11-9_93	191.6	0.2	0.0	1.7	**3.1**	17.4	5.747	1.47	**0.074**	4.75	1.784	4.97	0.174	1.47	**0.296**
CS11-9_94	160.5	0.3	0.0	2.1	**3.9**	20.9	5.478	1.45	**0.076**	3.96	1.908	4.22	0.183	1.45	**0.344**
CS11-9_95	359.1	0.5	0.0	3.4	6.4	34.3	5.483	1.30	**0.075**	2.53	1.880	2.84	0.182	1.30	**0.456**
CS11-9_96	127.2	0.5	0.0	3.6	6.6	36.2	5.515	1.24	**0.074**	2.56	1.861	2.84	0.181	1.24	**0.438**
CS11-9_97	81.0	0.7	0.0	4.6	8.6	46.5	5.504	1.31	**0.074**	1.94	1.852	2.34	0.182	1.31	**0.559**
CS11-9_98	-114.1	0.5	0.0	3.1	5.9	31.7	5.429	1.33	**0.076**	2.78	1.922	3.08	0.184	1.33	**0.433**
CS11-9_99	163.8	0.3	0.0	2.3	4.3	23.0	5.458	1.55	**0.075**	3.51	1.899	3.84	0.183	1.55	**0.403**
CS11-9_100	31.8	0.5	0.0	3.2	6.3	32.4	5.249	1.62	**0.077**	2.55	2.012	3.02	0.191	1.62	**0.538**

CS11-9_101	-167.5	0.2	0.0	1.2	**2.2**	12.3	5.444	1.48	**0.075**	6.28	1.898	6.45	0.184	1.48	**0.229**
CS11-9_102	66.4	0.4	0.0	2.7	5.0	27.5	5.452	1.51	**0.076**	3.00	1.916	3.36	0.183	1.51	**0.450**
CS11-9_103	134.8	1.3	0.1	8.9	16.1	90.3	5.733	1.31	**0.075**	1.14	1.804	1.74	0.174	1.31	0.754
CS11-9_104	3.1	0.9	0.1	5.9	10.7	59.6	5.680	1.43	**0.076**	1.70	1.835	2.22	0.176	1.43	**0.645**
CS11-9_105	-25.2	1.0	0.1	6.7	12.0	68.1	5.784	1.55	**0.073**	1.55	1.750	2.19	0.173	1.55	**0.705**
CS11-9_106	89.5	0.1	0.0	0.9	**1.5**	8.6	5.981	1.78	**0.073**	9.34	1.678	9.50	0.167	1.78	**0.187**
CS11-9_107	250.9	0.5	0.0	3.2	5.7	31.8	5.655	1.27	**0.076**	2.70	1.851	2.98	0.177	1.27	**0.425**
CS11-9_108	262.7	0.8	0.1	5.2	9.5	52.1	5.585	2.78	**0.107**	14.96	2.649	15.22	0.179	2.78	**0.183**
CS11-9_109	369.7	0.4	0.0	2.9	5.3	29.3	5.606	1.40	**0.075**	2.92	1.843	3.24	0.178	1.40	**0.432**
CS11-9_110	514.4	0.3	0.0	2.2	**3.7**	21.8	5.972	1.61	**0.074**	4.26	1.715	4.55	0.167	1.61	**0.353**
CS11-9_111	22.8	0.3	0.0	2.2	4.1	22.2	5.521	1.59	**0.076**	3.70	1.889	4.03	0.181	1.59	**0.394**
CS11-9_112	104.1	2.9	0.2	17.8	35.6	179.7	5.142	1.42	**0.079**	0.56	2.118	1.53	0.194	1.42	0.931
CS11-9_113	-40.6	0.5	0.0	3.4	6.3	33.9	5.481	1.45	**0.077**	2.48	1.935	2.87	0.182	1.45	**0.505**
CS11-9_114	64.6	0.5	0.0	3.5	6.3	34.9	5.638	1.43	**0.075**	2.77	1.832	3.12	0.177	1.43	**0.458**
CS11-9_115	85.8	0.3	0.0	2.2	4.1	22.5	5.530	1.70	**0.077**	3.61	1.909	3.99	0.181	1.70	**0.427**
CS11-9_116	26.9	0.1	0.0	0.9	**1.7**	9.3	5.724	2.23	**0.075**	8.04	1.799	8.35	0.175	2.23	**0.268**
CS11-9_117	123.3	0.5	0.0	3.6	6.6	35.9	5.544	1.23	**0.077**	2.42	1.917	2.71	0.180	1.23	**0.454**
CS11-9_118	53.3	0.3	0.0	2.2	**4.0**	21.8	5.570	1.71	**0.074**	3.92	1.842	4.28	0.180	1.71	**0.400**
CS11-9_119	111.4	0.3	0.0	2.2	**3.9**	21.9	5.652	1.50	**0.077**	3.70	1.878	4.00	0.177	1.50	**0.375**
CS11-9_120	-94.4	0.8	0.0	5.2	9.3	52.7	5.741	1.38	**0.075**	1.78	1.809	2.25	0.174	1.38	**0.612**
CS11-13_1	122.1	2.6	0.2	11.7	32.8	121.6	3.768	1.98	**0.098**	0.51	3.597	2.04	0.265	1.98	0.968
CS11-13_2	131.4	4.5	0.3	32.5	57.4	338.2	5.943	2.03	**0.074**	0.44	1.724	2.07	0.168	2.03	0.978
CS11-13_3	121.3	1.7	0.1	7.9	21.1	81.8	3.934	1.95	**0.097**	0.79	3.408	2.10	0.254	1.95	0.928
CS11-13_4	211.6	2.0	0.1	11.7	24.9	122.1	4.981	2.00	**0.087**	0.77	2.404	2.14	0.201	2.00	0.933
CS11-13_6	206.5	3.1	0.2	21.2	39.1	219.9	5.714	2.19	**0.074**	0.62	1.792	2.28	0.175	2.19	0.962
CS11-13_7	341.0	0.3	0.0	2.2	**3.9**	22.4	5.840	1.98	**0.075**	4.03	1.766	4.49	0.171	1.98	**0.441**
CS11-13_9	-104.2	2.5	0.2	16.6	32.3	172.5	5.431	2.09	**0.075**	0.72	1.909	2.21	0.184	2.09	0.946
CS11-13_10	-57.8	1.7	0.1	10.5	21.6	109.3	5.152	2.01	**0.079**	0.83	2.106	2.17	0.194	2.01	0.924
CS11-13_11	-22.3	1.4	0.1	6.2	18.1	64.7	3.631	2.05	**0.099**	0.81	3.744	2.21	0.275	2.05	0.930
CS11-13_12	49.2	1.1	0.1	4.9	13.6	50.9	3.796	2.05	**0.094**	1.11	3.424	2.33	0.263	2.05	0.879
CS11-13_13	-188.1	8.2	0.6	44.6	104.4	463.2	4.508	2.06	**0.090**	0.32	2.746	2.09	0.222	2.06	0.988
CS11-13_15	-11.2	0.4	0.0	2.7	4.7	27.6	5.967	2.19	**0.073**	3.46	1.683	4.10	0.168	2.19	**0.535**

CS11-13_14	202.2	5.2	0.4	21.5	66.6	223.4	3.405	2.13	**0.101**	0.27	4.109	2.15	0.294	2.13	0.992
CS11-13_19	-106.1	9.9	0.8	42.1	126.4	437.6	3.508	2.45	**0.102**	0.19	3.997	2.46	0.285	2.45	0.997
CS11-13_18	215.3	2.3	0.2	10.1	28.7	104.7	3.749	1.99	**0.101**	0.55	3.703	2.06	0.267	1.99	0.964
CS11-13_16	12.7	1.6	0.1	11.6	20.8	120.4	5.872	2.10	**0.075**	0.95	1.754	2.30	0.170	2.10	0.910
CS11-13_17	91.0	8.2	0.7	34.1	104.2	354.1	3.449	2.09	**0.103**	0.24	4.109	2.11	0.290	2.09	0.994
CS11-13_22	-60.1	10.8	1.0	42.9	137.8	445.8	3.285	1.96	**0.115**	0.13	4.818	1.96	0.304	1.96	0.998
CS11-13_20	-52.3	9.5	0.9	32.4	121.2	336.7	2.819	1.98	**0.114**	0.18	5.572	1.99	0.355	1.98	0.996
CS11-13_21	535.6	0.3	0.0	1.8	4.3	18.8	4.447	2.61	**0.085**	3.28	2.633	4.19	0.225	2.61	**0.623**
CS11-13_23	338.7	0.4	0.0	2.2	4.6	22.9	5.045	2.23	**0.082**	3.24	2.247	3.93	0.198	2.23	**0.567**
CS11-13_24	266.6	2.6	0.2	12.0	33.3	124.7	3.800	2.17	**0.099**	0.49	3.596	2.23	0.263	2.17	0.975
CS11-13_26	178.1	2.9	0.2	21.2	36.5	219.9	6.107	2.46	**0.073**	0.60	1.638	2.53	0.164	2.46	0.971
CS11-13_28	108.3	8.8	0.8	38.0	112.1	395.1	3.568	2.27	**0.102**	0.24	3.924	2.28	0.280	2.27	0.994
CS11-13_29	17.0	3.3	0.3	15.6	41.5	162.5	3.975	2.10	**0.091**	0.47	3.169	2.15	0.252	2.10	0.976
CS11-13_30	217.4	0.7	0.0	4.6	9.1	47.8	5.333	1.98	**0.076**	1.86	1.973	2.72	0.187	1.98	**0.729**
CS11-13_31	-143.5	3.1	0.2	16.6	39.0	172.2	4.481	2.01	**0.086**	0.52	2.656	2.07	0.223	2.01	0.968
CS11-13_32	-135.4	5.4	0.5	21.3	69.0	221.9	3.257	2.02	**0.106**	0.29	4.500	2.04	0.307	2.02	0.990
CS11-13_33	53.0	0.8	0.1	3.9	9.9	40.6	4.178	2.00	**0.089**	1.59	2.937	2.56	0.239	2.00	0.783
CS11-13_35	143.2	2.5	0.2	16.5	32.0	171.2	5.427	1.93	**0.076**	0.69	1.938	2.05	0.184	1.93	0.942
CS11-13_36	69.7	0.7	0.0	3.9	8.4	41.0	4.954	2.08	**0.080**	1.91	2.235	2.82	0.202	2.08	**0.735**
CS11-13_37	56.5	0.3	0.0	2.2	**3.8**	23.1	6.135	2.06	**0.072**	4.19	1.608	4.67	0.163	2.06	**0.441**
CS11-13_38	19.4	1.1	0.1	4.7	14.1	48.7	3.513	2.03	**0.102**	1.02	3.997	2.27	0.285	2.03	0.894
CS11-13_39	206.0	2.4	0.2	10.4	30.6	108.2	3.594	2.06	**0.100**	0.52	3.828	2.13	0.278	2.06	0.969
CS11-13_40	-31.1	4.4	0.4	21.5	55.9	223.5	4.054	1.96	**0.095**	0.41	3.244	2.00	0.247	1.96	0.978
CS11-13_41	-2.3	4.2	0.3	23.8	53.2	247.5	4.742	2.08	**0.082**	0.46	2.388	2.13	0.211	2.08	0.977
CS11-13_42	-17.7	1.2	0.1	9.2	15.8	95.9	6.176	1.99	**0.072**	1.21	1.599	2.33	0.162	1.99	0.855
CS11-13_43	75.7	0.8	0.1	4.3	10.3	44.7	4.430	1.89	**0.086**	1.71	2.672	2.55	0.226	1.89	**0.742**
CS11-13_44	0.8	3.8	0.3	17.7	48.8	184.3	3.837	2.06	**0.093**	0.39	3.330	2.09	0.261	2.06	0.982
CS11-13_45	205.3	5.3	0.5	22.0	67.6	228.9	3.439	2.05	**0.101**	0.32	4.064	2.07	0.291	2.05	0.988
CS11-13_46	-49.6	5.2	0.4	21.8	66.8	226.8	3.446	2.02	**0.102**	0.34	4.063	2.05	0.290	2.02	0.986
CS11-13_47	239.4	1.5	0.1	6.3	19.7	65.5	3.376	2.06	**0.100**	0.81	4.080	2.21	0.296	2.06	0.930
CS11-13_48	60.2	1.1	0.1	5.1	13.9	52.5	3.822	2.24	**0.099**	1.07	3.564	2.48	0.262	2.24	0.903
CS11-13_49	-80.9	2.1	0.2	11.6	27.0	121.0	4.547	2.34	**0.085**	0.71	2.578	2.45	0.220	2.34	0.957

CS11-13_50	-7.0	0.7	0.0	5.9	8.9	60.8	6.898	2.46	**0.074**	2.06	1.481	3.20	0.145	2.46	0.766
CS11-13_51	-36.7	0.5	0.0	2.3	6.8	24.2	3.605	2.41	**0.101**	1.87	3.867	3.05	0.277	2.41	0.789
CS11-13_52	8.8	0.2	0.0	1.4	**2.8**	15.1	5.547	2.36	**0.076**	5.22	1.894	5.73	0.180	2.36	**0.413**
CS11-13_54	87.3	1.1	0.1	6.1	13.8	63.7	4.683	2.29	**0.085**	1.28	2.488	2.62	0.214	2.29	0.872
CS11-13_55	-32.0	1.5	0.1	10.9	19.6	113.6	5.867	2.07	**0.074**	1.00	1.744	2.30	0.170	2.07	0.900
CS11-13_56	-212.8	1.4	0.1	6.3	17.9	65.8	3.734	1.97	**0.095**	0.95	3.523	2.18	0.268	1.97	0.901
CS11-13_57	36.9	2.3	0.1	15.0	29.6	156.3	5.369	1.98	**0.077**	0.68	1.971	2.10	0.186	1.98	0.946
CS11-13_59	242.1	1.2	0.1	4.9	15.2	51.0	3.396	1.99	**0.104**	0.92	4.203	2.20	0.294	1.99	0.908
CS11-13_60	282.2	1.4	0.1	5.6	17.4	58.3	3.445	2.05	**0.101**	0.85	4.039	2.22	0.290	2.05	0.924
CS11-13_62	44.5	2.3	0.2	9.4	29.3	97.7	3.379	1.99	**0.102**	0.55	4.159	2.07	0.296	1.99	0.965
CS11-13_63	-48.1	0.2	0.0	1.4	**3.1**	14.2	4.701	2.37	**0.084**	4.41	2.476	5.01	0.213	2.37	**0.474**
CS11-13_64	60.6	3.0	0.2	14.5	37.7	150.7	4.062	1.98	**0.095**	0.55	3.229	2.06	0.246	1.98	0.964
CS11-13_65	168.7	3.0	0.2	14.7	38.2	152.9	4.028	3.15	**0.097**	0.90	3.328	3.28	0.248	3.15	0.961
CS11-13_66	-136.0	2.7	0.2	14.4	34.8	149.7	4.357	2.28	**0.089**	0.49	2.820	2.34	0.229	2.28	0.978
CS11-13_67	254.4	6.2	0.5	26.6	78.8	276.4	3.558	2.02	**0.102**	0.24	3.944	2.03	0.281	2.02	0.993
CS11-13_68	87.1	0.5	0.0	2.9	7.0	30.0	4.397	1.97	**0.093**	2.13	2.923	2.90	0.227	1.97	**0.679**
CS11-13_69	234.4	1.2	0.1	8.7	15.9	90.3	5.763	2.02	**0.074**	1.14	1.776	2.32	0.174	2.02	0.870
CS11-13_70	-34.0	0.6	0.0	3.6	7.4	37.2	5.111	2.19	**0.081**	2.35	2.194	3.21	0.196	2.19	**0.681**
CS11-13_71	208.4	2.4	0.1	16.3	30.1	169.5	5.712	2.02	**0.075**	0.67	1.815	2.13	0.175	2.02	0.948
CS11-13_72	232.0	3.9	0.4	15.4	50.2	159.7	3.228	2.02	**0.108**	0.41	4.609	2.06	0.310	2.02	0.980
CS11-13_73	-168.5	8.5	1.3	21.2	108.0	220.6	2.074	2.08	**0.182**	0.15	12.069	2.08	0.482	2.08	0.997
CS11-13_74	88.3	2.1	0.1	14.1	26.7	147.0	5.592	2.08	**0.075**	0.75	1.857	2.21	0.179	2.08	0.940
CS11-13_75	-103.2	3.5	0.3	14.8	44.6	154.2	3.508	2.03	**0.102**	0.37	4.009	2.06	0.285	2.03	0.983
CS11-13_77	-64.9	1.6	0.1	8.2	20.2	85.0	4.251	1.90	**0.087**	0.90	2.806	2.10	0.235	1.90	0.903
CS11-13_78	187.2	1.2	0.1	5.2	15.0	54.0	3.657	1.97	**0.100**	1.06	3.757	2.24	0.273	1.97	0.881
CS11-13_79	244.3	0.8	0.0	5.1	9.6	53.3	5.687	1.92	**0.075**	1.85	1.809	2.67	0.176	1.92	**0.721**
CS11-13_80	645.8	2.5	0.2	12.5	31.3	129.9	4.208	2.01	**0.090**	0.56	2.960	2.08	0.238	2.01	0.963
CS11-13_81	94.5	3.2	0.3	13.0	40.9	134.9	3.384	1.99	**0.111**	0.45	4.513	2.04	0.296	1.99	0.976
CS11-13_82	-51.1	2.3	0.2	9.9	29.2	103.1	3.584	2.05	**0.102**	0.53	3.931	2.11	0.279	2.05	0.968
CS11-13_83	92.7	1.9	0.1	10.3	24.1	107.0	4.514	2.02	**0.086**	0.87	2.632	2.20	0.222	2.02	0.919
CS11-13_84	69.8	4.4	0.3	31.6	55.6	328.2	6.026	1.95	**0.073**	0.48	1.679	2.01	0.166	1.95	0.972
CS11-13_85	241.2	0.8	0.1	4.2	9.8	43.2	4.482	2.08	**0.086**	1.68	2.637	2.67	0.223	2.08	0.778

$^{207}Pb/^{206}Pb$	2s abs	$^{206}Pb/^{238}U$	2s abs	$^{207}Pb/^{235}U$	2s abs	6-38/7-6
1988.6	12.3	2041.4	45.4	2015.3	25.5	-3%
1946.2	31.7	2437.0	90.5	2180.0	50.1	-25%
2281.0	12.0	814.6	105.1	1323.6	98.1	64%
2153.0	10.7	2167.2	41.1	2159.9	22.6	-1%
1909.1	34.6	1947.2	67.0	1928.8	46.9	-2%
1926.1	5.6	2005.9	57.7	1966.9	29.3	-4%
1876.8	4.3	1942.6	27.1	1911.0	14.4	-4%
2154.8	12.0	2186.3	24.0	2170.1	16.8	-1%
2137.6	20.9	2115.2	24.7	2126.6	24.2	1%
1897.5	4.3	1858.9	37.2	1877.2	20.0	2%
1997.0	11.5	1968.1	27.9	1982.2	18.1	1%
2619.2	14.4	2589.5	63.0	2606.2	31.7	1%
1920.1	8.4	1840.5	41.0	1878.2	23.1	4%
1987.7	7.3	1715.3	37.5	1841.7	22.1	14%
2142.5	4.4	2134.5	37.5	2138.6	18.9	0%
1839.9	19.6	2186.6	138.9	2013.3	66.7	-19%
2159.5	12.7	2143.6	48.4	2151.7	26.7	1%
1944.9	24.1	2247.3	190.2	2093.2	89.2	-16%
2131.3	24.6	2088.9	38.7	2110.3	31.1	2%
1854.8	4.1	1824.6	36.3	1838.7	19.7	2%
2161.6	24.2	2149.6	78.0	2155.8	44.7	1%
2147.4	12.2	2238.9	42.6	2191.5	23.6	-4%
1979.2	5.7	1860.8	63.1	1917.4	33.7	6%
1943.2	17.8	2396.6	271.3	2160.5	118.0	-23%
1895.6	7.9	1898.2	116.6	1896.9	60.1	0%
2839.8	3.1	2876.4	150.5	2854.9	60.9	-1%
2131.7	16.7	2198.0	65.0	2163.9	35.1	-310%
2142.9	11.9	2156.6	54.9	2149.6	29.1	-60%
2141.0	10.9	2133.2	64.6	2137.2	33.2	40%
2958.9	7.6	2990.3	86.7	2971.5	35.6	-110%
2158.8	19.6	2126.7	60.6	2143.1	35.4	150%
1902.5	6.7	1903.5	43.8	1903.0	23.5	-10%
2137.9	8.3	2135.0	46.2	2136.4	24.0	10%

1903.7	14.9	1896.6	47.0	1900.0	28.1	40%
2149.7	5.7	2094.6	48.2	2122.5	24.5	260%
2663.1	3.5	2585.8	55.3	2629.4	24.5	290%
2776.3	2.3	2788.4	59.9	2781.4	25.1	-40%
2394.0	3.4	2401.3	74.7	2397.4	34.1	-30%
2144.2	7.5	2110.9	59.2	2127.8	29.9	160%
2916.7	3.1	2889.5	64.1	2905.5	26.4	90%
1873.5	3.4	1852.9	49.3	1862.6	26.1	110%
2131.7	12.7	2092.8	48.2	2112.5	26.9	180%
2138.3	13.0	2110.9	52.8	2124.8	28.9	130%
1957.4	5.9	1959.9	46.8	1958.6	24.5	-10%
2136.2	9.8	2118.3	47.3	2127.4	25.1	80%
2378.7	35.7	1418.0	85.7	1850.5	65.7	4040%
2110.7	18.5	2193.0	45.6	2150.8	28.6	-390%
2171.0	42.4	2159.2	54.4	2165.2	49.8	50%
2177.5	20.0	2143.1	50.2	2160.7	31.7	160%
1881.8	4.4	1900.4	46.1	1891.5	24.2	-100%
2715.9	5.9	2728.9	72.0	2721.4	31.1	-50%
1898.4	5.7	1865.0	51.3	1880.8	27.4	180%
2742.0	6.8	2742.7	67.3	2742.3	29.3	0%
1935.4	14.0	1917.6	58.4	1926.2	32.9	90%
2720.7	5.9	2738.5	69.9	2728.2	30.1	-70%
2744.0	5.0	2782.0	69.2	2760.0	29.3	-140%
2128.2	16.9	2167.5	69.7	2147.4	37.4	-180%
1917.0	5.3	1925.8	55.1	1921.6	28.7	-50%
1925.1	4.2	1885.6	71.0	1904.5	37.1	210%
3217.6	4.5	3181.9	91.8	3203.8	35.6	110%
1916.9	7.8	1969.4	50.1	1944.0	26.4	-270%
1881.9	8.8	1876.9	50.8	1879.3	27.7	30%
2149.4	10.8	2152.9	56.5	2151.1	29.4	-20%
2723.6	5.0	2761.0	60.3	2739.5	25.9	-140%
2143.0	14.4	2155.5	51.8	2149.1	28.9	-60%
1879.1	13.0	1957.8	51.6	1919.9	28.9	-420%
2552.6	7.1	2616.8	59.9	2580.7	27.0	-250%

2128.8	18.7	2210.5	56.0	2168.4	32.5	-380%
2467.0	17.7	2592.3	67.7	2522.6	34.9	-510%
1916.9	8.9	1949.0	53.4	1933.5	28.4	-170%
2782.8	5.6	2825.3	67.5	2800.6	28.6	-150%
2718.4	3.3	2691.4	74.1	2706.8	31.7	100%
1906.2	4.3	1916.5	47.8	1911.6	24.9	-50%
2026.6	14.0	2004.4	50.5	2015.3	28.8	110%
2116.5	32.4	2209.3	61.9	2161.5	43.5	-440%
1892.0	5.8	1926.7	49.0	1910.1	25.7	-180%
1850.5	4.7	1890.1	45.9	1871.3	24.2	-210%
2712.7	2.7	2757.0	71.7	2731.5	30.1	-160%
2146.5	7.8	2183.9	58.6	2164.7	29.1	-170%
2139.5	16.5	2174.4	61.6	2156.5	33.8	-160%
2655.8	12.0	1491.9	115.9	2042.4	75.4	4380%
2131.5	8.1	2167.6	61.6	2149.1	30.7	-170%
1969.1	9.8	1997.4	61.0	1983.6	32.0	-140%
1891.6	17.9	1922.8	59.8	1907.9	34.9	-160%
2072.4	15.9	1895.2	47.0	1981.3	29.1	850%
2772.8	8.5	2828.9	83.2	2796.3	35.5	-200%
2162.6	14.5	2228.9	50.1	2194.5	27.8	-310%
1899.0	8.5	1924.9	61.3	1912.4	32.4	-140%
2297.8	5.7	2306.1	80.8	2301.7	37.9	-40%
2735.3	5.7	2737.2	90.2	2736.1	38.4	-10%
2125.8	17.7	2125.7	79.2	2125.8	42.2	0%
2739.9	3.1	2736.6	66.3	2738.5	28.1	10%
1938.0	14.4	1643.4	133.1	1777.1	76.0	1520%
1924.9	23.3	1912.1	66.1	1918.3	40.4	1%
1907.1	20.2	1928.0	66.2	1917.9	38.8	-1%
1900.8	22.0	1906.5	62.0	1903.8	37.9	0%
1901.6	14.7	1907.9	67.5	1904.9	37.3	0%
2157.3	8.6	2196.6	75.2	2176.4	36.8	-2%
2159.6	9.4	2167.6	72.6	2163.5	36.1	0%
2174.5	13.5	2161.0	74.4	2168.0	38.3	1%
2162.2	28.1	2193.5	73.2	2177.4	44.8	-1%

2111.3	29.4	1448.8	96.7	1740.5	66.3	31%
2199.5	18.8	2168.3	80.5	2184.4	43.0	1%
1942.1	13.4	1824.1	78.2	1879.9	43.4	6%
2535.0	6.2	2555.7	85.4	2544.2	37.9	-1%
2143.1	12.0	2209.2	70.9	2175.1	35.6	-3%
2141.3	9.6	2165.5	77.3	2153.1	38.3	-1%
2134.7	12.3	2162.4	73.4	2148.2	37.4	-1%
2153.9	25.2	2156.3	87.6	2155.1	49.0	0%
3175.6	21.7	2381.3	198.4	2835.0	95.3	25%
2753.8	13.6	2373.1	77.0	2584.0	38.9	14%
2698.2	8.1	2694.2	94.5	2696.5	41.0	0%
2717.0	4.3	2712.7	94.4	2715.2	40.1	0%
2133.7	12.2	2125.4	72.2	2129.6	37.1	0%
2136.8	7.1	2125.8	71.6	2131.4	35.5	1%
2380.3	34.5	1759.9	101.4	2062.6	66.4	26%
2122.4	14.9	2123.9	80.1	2123.1	41.6	0%
2131.1	11.2	2115.5	76.7	2123.4	39.0	1%
3256.4	1.6	3091.2	108.0	3192.2	42.2	5%
2128.6	9.4	2117.5	75.4	2123.1	37.9	1%
2126.6	9.1	2153.3	78.3	2139.7	38.7	-1%
2133.8	24.0	2115.5	70.8	2124.8	41.9	1%
1887.8	10.5	1854.1	71.3	1870.0	38.6	2%
2649.0	4.3	2549.4	93.4	2605.3	41.3	4%
2745.4	7.8	2482.8	85.8	2630.0	39.6	10%
2124.1	6.0	2126.9	74.0	2125.5	36.4	0%
2750.3	8.7	2737.6	85.8	2744.9	37.4	0%
2769.3	5.5	2541.8	79.9	2670.4	36.0	8%
2779.7	17.0	2781.5	93.8	2780.5	43.4	0%
1434.6	9.5	1482.2	34.8	1462.7	21.6	-3%
1306.3	10.8	1184.1	67.6	1228.1	44.5	9%
1815.0	9.1	1814.8	43.2	1814.9	24.4	0%
1501.9	12.2	1530.2	34.3	1518.4	22.1	-2%
1387.3	9.6	1326.1	33.9	1349.7	22.2	4%

1743.2	9.2	1760.4	33.2	1752.6	19.7	-1%
2557.5	8.4	2515.6	45.4	2538.8	22.2	2%
1305.2	9.7	1281.3	28.1	1290.2	19.0	2%
1155.2	12.4	1207.2	23.2	1188.7	17.1	-5%
2490.1	8.4	2277.8	37.6	2391.6	20.1	9%
1724.0	12.3	1694.1	35.3	1707.5	22.3	2%
1384.3	31.3	1399.0	25.8	1393.2	28.8	-1%
1283.0	13.4	1282.5	24.6	1282.7	18.2	0%
1143.4	15.0	1166.9	23.5	1158.7	18.3	-2%
1425.7	9.5	1460.3	37.9	1446.3	23.4	-2%
1297.5	11.1	1239.5	41.7	1260.8	27.7	4%
1541.1	82.6	1250.2	37.1	1361.6	68.0	19%
1576.1	18.9	1440.7	37.0	1496.4	27.1	9%
2562.6	8.4	2590.7	66.4	2575.0	30.3	-1%
1330.1	19.6	1230.2	27.7	1267.0	22.9	8%
1557.5	9.4	1572.6	44.1	1566.2	26.2	-1%
1536.8	10.0	1513.1	41.4	1523.0	25.4	2%
1538.0	9.4	1529.1	41.5	1532.9	25.1	1%
1770.1	9.1	1702.9	57.1	1733.2	32.4	4%
1617.4	19.2	1603.6	37.7	1609.6	26.8	1%
1395.5	11.8	1408.7	25.3	1403.5	17.7	-1%
1652.8	9.3	1673.0	40.3	1664.1	23.6	-1%
1043.6	16.5	1062.4	19.2	1056.3	16.6	-2%
1709.8	9.2	1699.1	38.2	1703.9	22.5	1%
1327.2	10.3	1342.3	37.4	1336.5	24.1	-1%
1441.0	9.5	1446.1	33.8	1444.0	21.3	0%
1500.1	22.9	1235.8	31.0	1335.9	26.9	18%
1217.0	14.6	1207.2	22.6	1210.8	17.8	1%
1849.1	9.0	1803.0	40.2	1824.5	23.0	2%
1350.6	11.7	1352.3	34.1	1351.6	22.6	0%
1263.8	9.8	1277.8	33.7	1272.6	22.1	-1%
1523.1	9.4	1527.2	41.4	1525.5	25.1	0%
1768.1	9.1	1759.9	34.4	1763.7	20.3	0%
1250.3	17.9	1213.7	25.3	1226.9	20.7	3%

1977.8	10.5	1995.9	39.9	1987.0	22.5	-1%
1238.9	11.0	1248.0	31.0	1244.7	21.0	-1%
2943.6	8.1	2949.1	68.8	2945.9	29.2	0%
1235.1	9.8	1252.1	27.9	1245.9	18.8	-1%
1518.4	10.7	1546.9	32.9	1534.9	20.8	-2%
1451.0	9.5	1433.5	38.6	1440.5	24.1	1%
1189.1	9.9	1094.1	37.7	1126.3	26.1	8%
1874.8	55.2	1534.1	34.3	1683.4	53.0	18%
1948.0	8.9	1846.7	47.2	1894.9	26.4	5%
1813.7	13.6	1827.2	30.2	1820.9	20.2	-1%
1804.6	9.1	1814.3	34.2	1809.8	20.0	-1%
1373.6	9.6	1338.4	28.5	1352.0	19.0	3%
1492.1	13.7	1443.4	29.3	1463.2	20.7	3%
1268.7	14.4	1252.7	25.0	1258.6	18.9	1%
1474.0	71.0	1532.5	40.6	1508.1	61.4	-4%
1216.0	9.8	1168.2	27.3	1185.1	19.0	4%
1474.4	36.2	1582.0	34.6	1536.5	35.4	-7%
1709.0	9.2	1579.4	51.1	1635.8	30.4	8%
1465.9	9.5	1459.3	30.2	1462.0	19.4	0%
1826.7	9.1	1850.1	46.4	1839.1	25.7	-1%
1947.7	8.9	1878.2	32.1	1911.4	18.9	4%
1497.2	9.5	1548.6	30.9	1527.0	19.2	-3%
2096.3	8.8	2195.4	56.2	2144.6	28.1	-5%
1151.0	11.4	1138.7	24.0	1143.0	17.5	1%
3025.6	8.0	2911.8	49.8	2979.5	22.4	4%
1726.3	9.2	1760.8	41.5	1745.1	23.7	-2%
1690.7	9.2	1546.3	40.7	1608.4	25.0	9%
2811.2	8.2	2781.4	42.0	2798.7	19.9	1%
1200.6	9.9	1174.9	29.8	1184.0	20.4	2%
1751.5	9.2	1765.0	30.0	1758.8	18.1	-1%
1491.4	9.5	1507.4	31.9	1500.8	20.0	-1%
1136.2	14.1	1146.3	20.8	1142.8	16.6	-1%
1245.2	9.8	1054.8	33.8	1118.8	24.3	15%
1606.9	9.3	1641.6	34.3	1626.4	20.6	-2%

1518.8	15.8	1512.4	31.3	1515.0	22.3	0%
2368.1	8.5	1867.8	69.9	2116.7	38.8	21%
1786.4	9.1	1810.2	36.7	1799.2	21.2	-1%
1152.8	59.2	1154.8	23.4	1154.1	43.0	0%
1796.0	9.1	1795.3	36.0	1795.6	20.9	0%
1512.4	9.7	1524.8	26.0	1519.6	17.0	-1%
1964.9	8.9	1965.2	35.4	1965.1	20.0	0%
1584.0	32.8	1547.1	34.4	1562.8	33.8	2%
1449.2	21.1	1431.9	34.5	1438.9	26.5	1%
1485.8	9.8	1468.7	23.4	1475.7	15.9	1%
1321.9	9.7	1344.2	27.8	1335.6	18.5	-2%
1482.4	10.0	1271.1	24.5	1352.0	17.6	14%
1271.0	17.3	1276.5	21.4	1274.4	18.4	0%
1799.6	9.1	1837.0	39.7	1819.5	22.4	-2%
1756.1	9.1	1727.0	32.3	1740.2	19.5	2%
1054.6	34.6	1025.3	23.8	1034.7	27.3	3%
1732.4	9.2	1745.2	42.2	1739.4	24.2	-1%
1825.3	9.1	1759.1	37.1	1789.6	21.8	4%
1552.4	14.4	1532.5	54.7	1540.9	33.6	1%
1989.5	8.9	1976.5	34.0	1982.9	19.3	1%
1447.0	11.1	1190.1	25.9	1284.9	19.2	18%
1801.4	3.7	1780.1	27.7	1790.0	15.3	1%
2716.4	2.3	2711.9	42.2	2714.4	18.1	0%
1433.8	21.7	1380.0	22.5	1401.3	21.9	4%
1284.3	11.0	1275.6	42.7	1278.9	27.8	1%
1494.9	14.7	1362.7	26.7	1415.1	20.2	9%
1196.5	21.0	1176.4	20.8	1183.5	19.9	2%
1727.9	4.3	1685.1	39.6	1704.2	22.2	2%
1796.2	6.8	1793.5	46.3	1794.8	25.4	0%
1060.8	68.7	1081.2	28.8	1074.5	48.1	-2%
1050.1	28.6	1070.5	27.4	1063.8	25.9	-2%
1099.6	9.5	1132.4	27.4	1121.3	18.9	-3%
1043.0	22.8	1059.4	24.2	1054.1	21.8	-2%
1008.6	67.5	808.3	22.7	863.7	41.6	20%

1062.8	59.8	1071.3	28.6	1068.5	42.8	-1%
1074.0	139.9	1054.8	36.6	1061.1	90.8	2%
1053.0	20.0	1064.8	29.2	1061.0	23.3	-1%
1180.4	71.2	1163.8	32.5	1169.6	52.9	1%
1051.9	44.4	1078.6	27.6	1069.8	33.9	-3%
1091.6	104.3	1068.5	32.8	1076.1	70.1	2%
1042.5	65.0	1079.0	31.4	1067.0	46.4	-4%
1044.9	26.1	1071.6	26.9	1062.9	24.5	-3%
1044.9	26.1	1071.6	26.9	1062.9	24.5	-3%
1029.8	88.4	1110.2	35.6	1083.3	60.8	-8%
1066.9	51.8	1072.0	25.9	1070.3	37.5	0%
1079.2	19.6	1095.9	24.9	1090.3	20.9	-2%
1072.2	69.9	1082.0	28.2	1078.8	48.8	-1%
1061.0	47.4	1080.7	24.6	1074.2	34.7	-2%
1092.9	45.0	1098.7	25.1	1096.7	33.9	-1%
1127.7	13.5	1150.2	31.0	1142.4	22.1	-2%
1050.4	53.2	1094.0	35.4	1079.5	41.4	-4%
1066.3	45.1	1083.5	27.6	1077.8	34.4	-2%
1069.9	80.6	1095.8	30.3	1087.2	55.6	-2%
1070.8	18.4	1093.6	44.0	1086.0	31.2	-2%
1052.4	53.3	1091.2	27.2	1078.3	38.7	-4%
1023.6	117.5	1087.0	36.1	1066.1	77.3	-6%
1066.6	29.8	1109.0	27.5	1094.8	26.6	-4%
1027.0	121.2	1090.9	33.8	1069.8	79.2	-6%
1068.2	25.8	1106.5	27.5	1093.6	24.7	-4%
1103.2	123.0	1077.4	36.0	1086.0	82.2	2%
1056.6	53.2	1091.2	29.6	1079.8	39.4	-3%
1066.6	52.5	1096.2	26.2	1086.3	38.2	-3%
1142.9	23.4	1083.5	26.6	1103.5	23.7	5%
1094.8	36.1	1053.5	27.7	1067.1	30.0	4%
1043.6	69.9	1051.9	31.1	1049.2	48.7	-1%
1103.8	77.1	1085.4	25.5	1091.5	53.0	2%

1078.7	44.6	1064.7	27.9	1069.3	34.3	1%
1079.5	40.9	1083.0	32.2	1081.9	34.1	0%
1097.8	45.6	1074.2	31.4	1082.1	36.3	2%
1066.7	18.2	1078.5	27.0	1074.6	21.5	-1%
1073.4	19.2	1062.4	28.5	1066.0	22.7	1%
1099.2	114.3	1074.8	30.0	1082.9	75.8	2%
1073.8	133.7	1039.3	30.9	1050.5	85.9	3%
1057.6	28.2	1060.5	25.7	1059.6	25.0	0%
1060.7	12.3	1037.1	28.1	1044.7	20.6	2%
1024.8	81.6	981.5	27.3	995.0	53.2	4%
1100.1	16.9	1053.8	29.7	1069.0	22.9	4%
1062.4	111.9	1035.7	31.6	1044.3	73.0	3%
1110.1	101.2	1089.3	29.5	1096.2	68.4	2%
1093.2	24.3	1063.7	24.7	1073.4	22.9	3%
1081.0	19.4	1078.3	28.1	1079.2	22.6	0%
1157.8	76.1	1111.7	31.8	1127.4	54.9	4%
1192.3	63.6	1176.5	36.3	1182.1	49.6	1%
1094.3	73.9	1041.3	35.7	1058.5	52.9	5%
1086.3	37.2	1053.1	23.9	1064.0	28.9	3%
1083.4	326.8	1105.1	56.3	1097.8	200.6	-2%
1092.8	38.7	1045.2	35.7	1060.7	34.7	4%
1436.8	14.8	1375.7	34.4	1399.8	23.9	4%
1155.1	68.7	1063.5	27.9	1094.0	49.0	8%
1060.9	63.7	1057.8	25.7	1058.8	44.1	0%
1342.7	62.9	1099.7	34.7	1184.4	50.2	18%
1051.6	25.1	1087.7	25.1	1075.8	23.2	-3%
1229.5	17.1	1226.3	28.4	1227.5	21.8	0%
1143.5	80.7	1080.2	32.2	1101.4	57.1	6%
1115.9	41.0	990.8	22.8	1030.5	30.6	11%
1075.3	31.7	1072.0	24.5	1073.1	26.3	0%
1105.9	142.8	1081.5	36.1	1089.6	94.0	2%
1075.8	39.9	1056.8	25.7	1063.0	31.0	2%

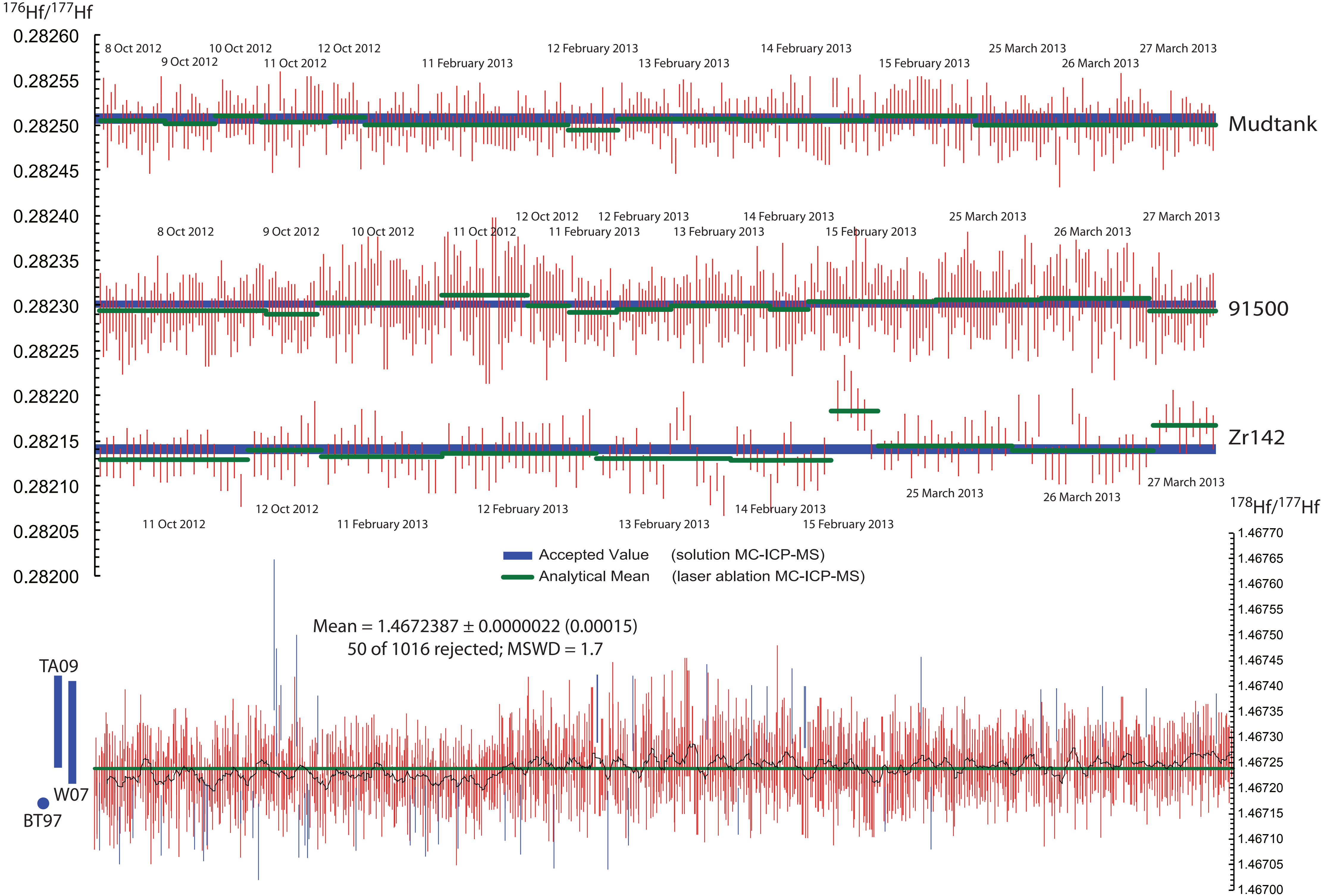
1173.4	47.6	1160.2	28.4	1164.8	37.5	1%
1146.5	146.8	1068.1	34.3	1094.2	96.9	7%
1124.1	41.2	1099.3	32.4	1107.7	34.7	2%
1069.8	160.3	1064.3	27.3	1066.1	101.6	1%
1082.4	36.0	1076.5	25.7	1078.4	29.0	1%
1063.8	29.6	1063.3	30.5	1063.5	27.9	0%
1501.0	11.6	1474.6	38.0	1485.5	24.2	2%
1079.0	33.1	1056.5	25.1	1063.8	27.2	2%
1067.7	46.1	1056.6	26.1	1060.2	34.4	1%
1064.7	32.9	1056.8	28.4	1059.4	28.4	1%
1091.6	39.3	1066.4	29.2	1074.7	32.2	2%
1214.0	91.2	1175.1	30.2	1188.9	65.7	3%
1091.3	62.8	1054.0	26.6	1066.2	44.2	3%
1079.1	26.2	1084.0	30.1	1082.4	26.2	0%
1058.2	120.8	1053.3	26.1	1054.9	77.7	0%
1067.0	192.4	1098.0	37.0	1087.7	122.4	-3%
1094.8	82.2	1103.8	28.0	1100.8	56.6	-1%
1081.2	58.0	1069.7	29.2	1073.5	42.2	1%
1060.4	35.6	1067.3	26.8	1065.1	29.1	-1%
1109.1	89.7	1060.7	26.7	1076.6	60.5	4%
1074.1	23.1	1060.3	27.3	1064.8	23.6	1%
1089.0	34.6	1058.2	26.7	1068.3	28.7	3%
1046.5	50.3	1065.8	25.8	1059.5	36.4	-2%
1025.1	156.5	1064.6	27.9	1051.7	98.1	-4%
1050.9	95.7	1034.2	28.1	1039.5	62.7	2%
1090.3	79.4	1080.9	28.8	1084.0	54.7	1%
1061.6	50.9	1080.0	25.7	1073.9	37.0	-2%
1052.9	51.5	1074.3	24.6	1067.2	36.9	-2%
1039.6	39.1	1076.2	25.8	1064.2	30.4	-4%
1087.1	55.6	1089.8	26.7	1088.9	40.3	0%
1073.1	70.6	1084.6	30.8	1080.8	49.8	-1%
1110.2	50.9	1124.2	33.4	1119.5	40.2	-1%

1066.7	126.3	1087.0	29.5	1080.3	82.4	-2%
1089.0	60.1	1085.7	30.1	1086.8	43.9	0%
1068.7	23.0	1036.4	25.0	1046.9	22.5	3%
1084.4	34.1	1045.5	27.6	1058.2	28.8	4%
1025.5	31.5	1028.1	29.3	1027.2	28.0	0%
1007.4	189.4	996.7	32.7	1000.0	114.2	1%
1092.8	54.1	1049.7	24.5	1063.8	38.6	4%
1753.9	273.8	1061.8	54.2	1314.3	202.7	39%
1066.5	58.7	1058.0	27.2	1060.8	41.7	1%
1048.8	85.8	998.0	29.6	1014.0	56.8	5%
1085.6	74.2	1073.2	31.3	1077.3	52.1	1%
1172.0	11.0	1145.5	29.8	1154.7	20.8	2%
1119.7	49.4	1080.3	28.8	1093.4	37.7	4%
1066.3	55.8	1052.6	27.7	1057.1	40.2	1%
1110.3	72.1	1071.4	33.6	1084.3	51.8	3%
1060.3	161.9	1038.0	42.7	1045.2	103.5	2%
1122.9	48.2	1068.9	24.2	1086.9	35.6	5%
1052.6	79.0	1064.4	33.5	1060.6	54.8	-1%
1121.2	73.9	1050.1	29.0	1073.5	51.6	6%
1077.2	35.7	1035.1	26.3	1048.7	29.0	4%
1592.3	9.5	1517.4	53.3	1549.0	32.0	5%
1049.6	8.8	1002.5	37.5	1017.4	26.3	4%
1572.0	14.7	1460.1	50.8	1506.3	32.5	7%
1357.5	14.9	1179.4	43.0	1243.9	30.3	13%
1048.1	12.5	1039.7	42.0	1042.4	29.3	1%
1062.8	81.0	1018.9	37.2	1033.0	56.6	4%
1074.0	14.4	1089.4	41.7	1084.3	29.0	-1%
1164.4	16.5	1143.6	41.9	1150.8	29.5	2%
1597.8	15.1	1568.3	56.9	1580.9	34.7	2%
1513.8	21.0	1507.2	54.9	1510.0	36.0	0%
1421.1	6.2	1291.5	48.0	1341.1	30.6	9%
1009.2	70.2	998.8	40.4	1002.1	50.9	1%

1651.0	5.0	1660.1	62.2	1656.1	34.5	-1%
1655.4	3.5	1616.7	69.7	1633.6	39.2	2%
1636.7	10.1	1524.3	53.8	1572.0	32.5	7%
1060.1	19.2	1013.8	39.2	1028.6	29.4	4%
1675.3	4.4	1641.1	60.3	1656.1	33.8	2%
1876.2	2.3	1713.4	58.6	1788.0	32.4	9%
1862.7	3.2	1957.3	66.6	1911.8	33.7	-5%
1314.1	63.6	1307.5	61.6	1310.0	59.9	1%
1250.4	63.4	1165.8	47.4	1195.8	53.8	7%
1607.1	9.2	1506.1	58.1	1548.6	34.8	6%
1001.8	12.2	977.5	44.4	985.0	31.4	2%
1652.5	4.5	1592.8	63.8	1618.7	36.3	4%
1454.2	8.9	1446.7	54.3	1449.7	32.7	1%
1103.3	37.2	1107.8	40.2	1106.3	36.0	0%
1345.4	10.0	1298.5	47.0	1316.3	30.1	3%
1737.1	5.3	1726.0	60.8	1731.0	33.3	1%
1404.0	30.5	1383.3	49.7	1391.5	38.1	1%
1102.2	13.8	1090.2	38.7	1094.2	27.1	1%
1204.9	37.7	1185.2	44.8	1192.2	38.9	2%
973.5	85.5	973.4	37.1	973.4	56.9	0%
1658.0	18.9	1614.8	57.6	1633.7	36.2	3%
1620.2	9.8	1582.4	57.6	1598.7	33.7	2%
1535.4	7.8	1421.3	49.8	1467.7	30.6	7%
1248.7	8.9	1233.4	46.5	1239.0	30.0	1%
975.7	24.6	967.4	35.7	970.0	28.7	1%
1334.7	33.1	1312.1	44.8	1320.8	37.0	2%
1480.9	7.5	1493.0	54.5	1488.0	32.2	-1%
1649.2	6.0	1645.4	59.2	1647.0	33.2	0%
1652.6	6.3	1642.3	58.3	1646.8	32.9	1%
1622.4	15.1	1672.4	60.3	1650.3	35.4	-3%
1601.5	19.9	1498.3	59.6	1541.6	38.6	6%
1316.0	13.8	1281.5	54.3	1294.5	35.2	3%

1044.0	41.5	872.7	40.0	922.6	38.1	16%
1644.6	34.8	1578.0	67.1	1606.8	48.1	4%
1100.5	104.4	1068.5	46.4	1079.1	73.4	3%
1304.3	24.9	1247.6	51.7	1268.6	37.3	4%
1047.8	20.2	1014.5	38.7	1025.1	29.3	3%
1536.1	17.8	1529.8	53.3	1532.5	34.0	0%
1114.4	13.6	1101.1	40.0	1105.6	27.8	1%
1688.4	17.0	1663.6	58.2	1674.6	35.4	1%
1640.9	15.7	1643.0	59.1	1642.1	35.4	0%
1659.7	10.1	1671.1	58.4	1666.0	33.3	-1%
1302.3	85.8	1243.3	53.5	1265.1	70.0	5%
1530.8	10.4	1418.7	50.3	1464.2	31.4	7%
1571.7	16.9	1429.4	80.4	1487.6	50.0	9%
1406.9	9.3	1331.9	54.7	1360.9	34.4	5%
1657.0	4.4	1596.5	56.8	1622.8	32.4	4%
1492.4	40.3	1321.0	46.9	1388.0	43.0	11%
1047.7	23.0	1031.6	38.4	1036.8	29.7	2%
1229.8	46.1	1151.9	45.9	1179.3	43.8	6%
1074.0	13.5	1040.0	38.6	1051.0	27.5	3%
1764.5	7.4	1739.5	61.2	1750.9	33.7	1%
2667.2	2.5	2536.4	86.4	2609.8	38.3	5%
1076.5	15.1	1060.5	40.5	1065.8	28.7	1%
1661.1	6.9	1616.7	57.7	1636.1	33.0	3%
1349.9	17.4	1361.8	46.4	1357.2	31.0	-1%
1617.6	19.8	1558.1	54.4	1583.6	35.3	4%
1058.0	37.2	1044.1	37.0	1048.6	34.3	1%
1432.5	10.7	1374.4	49.5	1397.3	31.1	4%
1812.2	8.1	1669.0	58.3	1733.5	33.4	8%
1664.2	9.8	1586.4	57.3	1620.2	33.7	5%
1342.0	16.7	1290.1	47.2	1309.7	31.9	4%
1024.0	9.6	989.8	35.7	1000.5	25.3	3%
1331.8	32.4	1298.3	48.7	1311.0	38.6	3%

Data supplement 11: Hf analyses of reference materials and stable isotope ratios for chapter 5.



Data supplement 12: Detrital zircon Hf data for chapter 5.

Hf	Spot	178Hf/177Hf	1s%	176Hf/177Hf	1s%	176Yb/177Hf	1s%
Siam1	1	1.467204	0.0023	0.281228	0.0060	0.031935	1.7
Siam1	4	1.467191	0.0027	0.281219	0.0062	0.038561	4.8
Siam1	5	1.467133	0.0031	0.281295	0.0070	0.011893	5.1
Siam1	6	1.467190	0.0022	0.281556	0.0056	0.022105	2.7
Siam1	7	1.467216	0.0025	0.281529	0.0056	0.002419	2.4
Siam1	8	1.467260	0.0025	0.281258	0.0073	0.057715	2.1
Siam1	9	1.467130	0.0020	0.281211	0.0065	0.035248	1.4
Siam1	10	1.467160	0.0022	0.281533	0.0048	0.010899	6.2
Siam1	11	1.467166	0.0035	0.281707	0.0060	0.028915	2.5
Siam1	13	1.467186	0.0029	0.280924	0.0063	0.003434	4.7
Siam1	18	1.467177	0.0025	0.281065	0.0059	0.028330	3.9
Siam1	20	1.467181	0.0020	0.281344	0.0048	0.075058	1.2
Siam1	14	1.467258	0.0043	0.281637	0.0063	0.052089	3.3
Siam1	22	1.467264	0.0067	0.281161	0.0091	0.030466	13.1
Siam1	23	1.467032	0.0041	0.281452	0.0058	0.014963	15.6
Siam1	24	1.467128	0.0050	0.281156	0.0077	0.070203	15.4
Siam1	25	1.467051	0.0057	0.281254	0.0077	0.038367	15.6
Siam1	26	1.467153	0.0043	0.281660	0.0058	0.023089	12.1
Siam1	29	1.467188	0.0027	0.281418	0.0050	0.040308	6.4
Siam1	30	1.467225	0.0028	0.280974	0.0055	0.052957	2.1
Siam1	31	1.467192	0.0046	0.281609	0.0083	0.034633	7.3
Siam1	32	1.467197	0.0045	0.280886	0.0064	0.006307	2.0
Siam1	33	1.467158	0.0042	0.281293	0.0059	0.037162	1.6
Siam1	34	1.467136	0.0034	0.280857	0.0069	0.004246	2.8
Siam1	35	1.467234	0.0031	0.281663	0.0062	0.025252	6.1
Siam1	36	1.467297	0.0033	0.281063	0.0066	0.022984	2.5
Siam1	37	1.467250	0.0036	0.281027	0.0061	0.020884	4.6
Siam1	38	1.467203	0.0030	0.281575	0.0059	0.016570	2.0
Siam1	39	1.467182	0.0033	0.281025	0.0058	0.002423	2.2
Siam1	40	1.467166	0.0029	0.281148	0.0061	0.022266	2.9
Siam1	41	1.467102	0.0031	0.281393	0.0058	0.014341	3.6
Siam1	42	1.467180	0.0026	0.281524	0.0059	0.004016	3.3
Siam1	44	1.467239	0.0028	0.280894	0.0062	0.006840	3.2
Siam1	45	1.467151	0.0023	0.281322	0.0079	0.047541	2.3
Siam1	46	1.467192	0.0032	0.281262	0.0062	0.017680	5.8
Siam1	47	1.467222	0.0025	0.281216	0.0054	0.071234	6.7
Siam1	48	1.467184	0.0033	0.281220	0.0061	0.035628	3.7
Siam1	49	1.467163	0.0034	0.281646	0.0054	0.013025	2.2
Siam1	50	1.467163	0.0037	0.281591	0.0083	0.012341	4.3
Siam1	51	1.467186	0.0030	0.281577	0.0062	0.051113	1.2
Siam1	52	1.467171	0.0030	0.280964	0.0053	0.022888	2.5
Siam1	53	1.467196	0.0024	0.281074	0.0065	0.031353	2.3
Siam1	54	1.467279	0.0037	0.281468	0.0062	0.014960	4.4
Siam1	55	1.467190	0.0038	0.281362	0.0068	0.037511	3.7
Siam1	56	1.467114	0.0028	0.280798	0.0051	0.010835	4.7
Siam1	57	1.467255	0.0028	0.281146	0.0062	0.023000	2.0
Siam1	59	1.467183	0.0024	0.280872	0.0064	0.034442	3.0
Siam1	72	1.467185	0.0030	0.281206	0.0058	0.022282	4.1
Siam1	73	1.467164	0.0030	0.281588	0.0059	0.054225	2.8
Siam1	74	1.467189	0.0036	0.281329	0.0063	0.023865	2.1
Siam1	75	1.467272	0.0033	0.280796	0.0062	0.039565	0.5
Siam1	76	1.467186	0.0031	0.281795	0.0063	0.052768	2.1
Siam1	77	1.467215	0.0031	0.281297	0.0049	0.035120	2.0
Siam1	78	1.467243	0.0027	0.281201	0.0058	0.036926	1.4
Siam1	79	1.467153	0.0027	0.280942	0.0050	0.010036	2.3
Siam1	80	1.467179	0.0028	0.281343	0.0047	0.038447	2.5

Siam1	86	1.467163	0.0026	0.280756	0.0064	0.039883	2.1
Siam1	88	1.467103	0.0035	0.281090	0.0058	0.018039	3.0
Siam1	89	1.467134	0.0031	0.281186	0.0055	0.025819	2.8
Siam1	90	1.467188	0.0029	0.281219	0.0059	0.044926	6.2
Siam1	91	1.467168	0.0026	0.280851	0.0062	0.009546	2.3
Siam1	92	1.467216	0.0027	0.281316	0.0049	0.016892	6.5
Siam1	93	1.467107	0.0028	0.281600	0.0058	0.034464	2.6
Siam1	94	1.467201	0.0029	0.281328	0.0051	0.044469	3.1
Siam1	96	1.467211	0.0025	0.281165	0.0053	0.037344	3.9
Siam1	97	1.467207	0.0023	0.280924	0.0064	0.013098	4.3
Siam1	95	1.467129	0.0025	0.281596	0.0053	0.030431	3.1
Siam1	98	1.467177	0.0027	0.280924	0.0057	0.022723	2.4
Siam1	100	1.467162	0.0031	0.281214	0.0051	0.060821	9.5
Siam1	101	1.467220	0.0024	0.280927	0.0061	0.025781	5.8
Siam1	102	1.467200	0.0022	0.281365	0.0061	0.009739	2.4
Siam1	111	1.467251	0.0021	0.281362	0.0047	0.027642	3.1
Siam1	112	1.467093	0.0022	0.281018	0.0050	0.050817	3.0
CS11-18	1	1.467221	0.0031	0.282085	0.0055	0.029338	4.6
CS11-18	2	1.467215	0.0023	0.281737	0.0050	0.023217	1.1
CS11-18	3	1.467185	0.0026	0.281773	0.0050	0.020326	1.8
CS11-18	4	1.467235	0.0029	0.281059	0.0043	0.013109	7.6
CS11-18	5	1.467209	0.0038	0.281724	0.0066	0.055561	3.9
CS11-18	7	1.467285	0.0031	0.281714	0.0057	0.071630	4.1
CS11-18	8	1.467275	0.0040	0.281144	0.0043	0.025346	1.9
CS11-18	9	1.467241	0.0038	0.281700	0.0043	0.035229	2.3
CS11-18	10	1.467279	0.0030	0.281720	0.0039	0.026404	5.2
CS11-18	11	1.467475	0.0078	0.281756	0.0140	0.030310	6.3
CS11-18	12	1.467225	0.0027	0.281749	0.0041	0.040645	4.0
CS11-18	13	1.467245	0.0037	0.281746	0.0046	0.039379	2.7
CS11-18	14	1.467174	0.0029	0.281140	0.0070	0.075130	1.2
CS11-18	15	1.467229	0.0032	0.281064	0.0066	0.021655	4.5
CS11-18	16	1.467194	0.0024	0.281669	0.0043	0.024567	0.9
CS11-18	17	1.467201	0.0034	0.281723	0.0052	0.036725	3.6
CS11-18	18	1.467210	0.0032	0.281678	0.0048	0.039265	3.0
CS11-18	19	1.467211	0.0030	0.281724	0.0061	0.017451	1.9
CS11-18	20	1.467103	0.0030	0.281737	0.0057	0.064331	0.7
CS11-18	21	1.467214	0.0033	0.281729	0.0046	0.069712	4.1
CS11-18	22	1.467171	0.0027	0.281712	0.0046	0.016559	4.8
CS11-18	23	1.467208	0.0033	0.281104	0.0047	0.048036	3.6
CS11-18	24	1.467211	0.0031	0.281643	0.0034	0.029077	0.7
CS11-18	26	1.467187	0.0038	0.281714	0.0057	0.032492	4.3
CS11-18	27	1.467232	0.0040	0.281090	0.0055	0.025560	2.4
CS11-18	29	1.467202	0.0038	0.281690	0.0038	0.030089	0.6
CS11-18	30	1.467219	0.0034	0.281767	0.0068	0.017737	3.1
CS11-18	32	1.467203	0.0035	0.281666	0.0053	0.036573	1.9
CS11-18	33	1.467285	0.0038	0.281680	0.0039	0.000466	3.4
CS11-18	35	1.467272	0.0031	0.281494	0.0038	0.019942	3.2
CS11-18	36	1.467240	0.0026	0.281027	0.0050	0.025288	5.7
CS11-18	37	1.467242	0.0030	0.281744	0.0053	0.032221	1.6
CS11-18	38	1.467181	0.0031	0.281067	0.0055	0.026007	12.9
CS11-18	39	1.467283	0.0030	0.281141	0.0061	0.054147	8.6
CS11-18	40	1.467244	0.0030	0.281729	0.0055	0.084858	1.6
CS11-18	41	1.467228	0.0029	0.281233	0.0059	0.044061	4.2
CS11-18	42	1.467203	0.0023	0.281787	0.0052	0.063936	0.7
CS11-18	43	1.467265	0.0023	0.281705	0.0032	0.026342	2.6
CS11-18	44	1.467232	0.0035	0.281070	0.0045	0.018572	13.0
CS11-18	46	1.467323	0.0028	0.281733	0.0041	0.054356	1.9

CS11-18	47	1.467245	0.0021	0.281042	0.0041	0.027098	2.6
CS11-18	48	1.467278	0.0022	0.281008	0.0043	0.016422	4.5
CS11-18	49	1.467181	0.0021	0.281067	0.0039	0.020617	5.0
CS11-18	50	1.467157	0.0028	0.281058	0.0038	0.021271	1.8
CS11-18	53	1.467218	0.0022	0.281076	0.0041	0.069859	4.4
CS11-18	63	1.467229	0.0022	0.281041	0.0039	0.015760	16.5
CS11-18	64	1.467240	0.0024	0.281091	0.0055	0.021801	7.1
CS11-18	65	1.467270	0.0025	0.281039	0.0041	0.018543	3.1
CS11-18	66	1.467232	0.0023	0.281091	0.0045	0.020575	3.5
CS11-18	72	1.467145	0.0023	0.281043	0.0045	0.086912	8.5
CS11-19	1	1.467239	0.0028	0.281668	0.0052	0.027974	2.3
CS11-19	3	1.467195	0.0026	0.281746	0.0050	0.052746	1.7
CS11-19	5	1.467245	0.0027	0.281794	0.0068	0.038520	1.9
CS11-19	6	1.467191	0.0032	0.281999	0.0043	0.043714	3.2
CS11-19	8	1.467277	0.0025	0.282210	0.0053	0.040402	4.2
CS11-19	9	1.467206	0.0031	0.281651	0.0043	0.046099	6.3
CS11-19	10	1.467193	0.0024	0.281936	0.0045	0.040190	3.2
CS11-19	12	1.467221	0.0032	0.281720	0.0046	0.059887	2.9
CS11-19	13	1.467208	0.0027	0.282017	0.0038	0.028682	4.9
CS11-19	14	1.467215	0.0027	0.281742	0.0043	0.031819	2.5
CS11-19	16	1.467167	0.0021	0.281796	0.0043	0.084121	1.5
CS11-19	18	1.467225	0.0028	0.282145	0.0041	0.050134	7.2
CS11-19	19	1.467161	0.0036	0.282150	0.0048	0.078024	3.7
CS11-19	20	1.467164	0.0029	0.281821	0.0053	0.076315	5.0
CS11-19	23	1.467187	0.0029	0.282009	0.0050	0.039945	5.1
CS11-19	24	1.467164	0.0027	0.281752	0.0050	0.086867	3.9
CS11-19	25	1.467252	0.0028	0.281339	0.0029	0.019083	2.1
CS11-19	26	1.467229	0.0028	0.281780	0.0045	0.038991	5.3
CS11-19	27	1.467182	0.0036	0.281932	0.0076	0.128208	3.1
CS11-19	28	1.467243	0.0034	0.281776	0.0061	0.025596	1.9
CS11-19	30	1.467235	0.0028	0.281831	0.0053	0.030604	2.5
CS11-19	31	1.467222	0.0025	0.281766	0.0041	0.019587	6.6
CS11-19	32	1.467178	0.0024	0.281768	0.0061	0.034457	1.4
CS11-19	33	1.467148	0.0022	0.281963	0.0043	0.016868	2.1
CS11-19	35	1.467159	0.0024	0.281799	0.0061	0.058232	4.0
CS11-19	38	1.467231	0.0023	0.281753	0.0027	0.050451	6.4
CS11-19	39	1.467195	0.0025	0.281973	0.0052	0.029455	3.9
CS11-19	40	1.467323	0.0031	0.281826	0.0046	0.029602	4.6
CS11-19	41	1.467229	0.0028	0.281715	0.0039	0.018746	8.8
CS11-19	42	1.467327	0.0031	0.281213	0.0039	0.025340	2.9
CS11-19	43	1.467193	0.0021	0.281783	0.0039	0.037121	1.4
CS11-19	44	1.467193	0.0025	0.281762	0.0034	0.024558	1.3
CS11-19	45	1.467193	0.0024	0.281739	0.0041	0.038562	4.1
CS11-19	46	1.467226	0.0027	0.282147	0.0039	0.074989	8.1
CS11-19	47	1.467165	0.0027	0.281692	0.0039	0.040626	2.0
CS11-19	48	1.467250	0.0026	0.281757	0.0050	0.018102	1.4
CS11-19	49	1.467251	0.0021	0.281809	0.0046	0.103557	3.6
CS11-19	50	1.467240	0.0023	0.281558	0.0041	0.038761	1.0
CS11-19	51	1.467220	0.0024	0.281313	0.0039	0.012304	2.5
CS11-19	52	1.467201	0.0020	0.281494	0.0038	0.014958	2.9
CS11-19	54	1.467219	0.0030	0.281892	0.0062	0.131601	2.0
CS11-19	55	1.467267	0.0027	0.281729	0.0036	0.028562	12.4
CS11-19	57	1.467226	0.0025	0.281708	0.0045	0.026398	2.1
CS11-19	58	1.467214	0.0022	0.281876	0.0041	0.079307	1.5
CS11-19	60	1.467172	0.0025	0.282055	0.0041	0.033697	12.3
CS11-19	63	1.467183	0.0025	0.281996	0.0055	0.027682	5.2
CS11-19	61	1.467216	0.0024	0.281965	0.0043	0.038238	4.9

CS11-19	71	1.467141	0.0030	0.281934	0.0038	0.057967	1.3
CS11-19	74	1.467187	0.0036	0.281967	0.0048	0.021074	2.5
CS11-19	76	1.467180	0.0030	0.282078	0.0068	0.031484	1.4
CS11-20	46.1	1.467089	0.0039	0.281975	0.0050	0.054497	1.4
CS11-20	46.2	1.467179	0.0030	0.282027	0.0027	0.054959	1.8
CS11-20	46.3	1.467233	0.0025	0.281961	0.0045	0.054859	1.7
CS11-20	46.4	1.467255	0.0036	0.281989	0.0045	0.055123	1.7
CS11-20	46.5	1.467238	0.0028	0.281997	0.0045	0.055126	2.0
CS11-20	46.6	1.467210	0.0033	0.281980	0.0052	0.055447	1.9
CS11-20	46.7	1.467216	0.0030	0.281974	0.0034	0.055049	1.8
CS11-20	46.8	1.467243	0.0032	0.281988	0.0057	0.057352	1.8
CS11-20	46.9	1.467122	0.0034	0.281990	0.0059	0.055008	1.8
CS11-20	3	1.467338	0.0027	0.282146	0.0025	0.018508	1.9
CS11-20	4	1.467243	0.0022	0.281717	0.0041	0.035387	1.8
CS11-20	7	1.467263	0.0022	0.281759	0.0035	0.012615	4.7
CS11-20	8	1.467282	0.0025	0.281795	0.0034	0.033417	5.5
CS11-20	9	1.467239	0.0025	0.281854	0.0034	0.036823	4.0
CS11-20	12	1.467221	0.0026	0.281724	0.0030	0.019477	1.2
CS11-20	13	1.467237	0.0021	0.281077	0.0027	0.022790	1.9
CS11-20	15	1.467303	0.0028	0.282029	0.0034	0.017105	12.4
CS11-20	16	1.467354	0.0026	0.281851	0.0050	0.087500	2.8
CS11-20	17	1.467295	0.0022	0.281809	0.0037	0.022686	1.4
CS11-20	18	1.467215	0.0025	0.281763	0.0046	0.023034	3.2
CS11-20	25	1.467325	0.0024	0.282146	0.0043	0.011816	6.3
CS11-20	27	1.467269	0.0023	0.282104	0.0032	0.044143	1.8
CS11-20	28	1.467254	0.0020	0.281012	0.0030	0.009900	3.7
CS11-20	29	1.467238	0.0022	0.282164	0.0039	0.019395	3.4
CS11-20	31	1.467253	0.0026	0.280917	0.0050	0.017083	4.2
CS11-20	33	1.467326	0.0022	0.281638	0.0041	0.018257	6.7
CS11-20	34	1.467240	0.0027	0.282186	0.0053	0.013878	3.4
CS11-20	37	1.467235	0.0029	0.281736	0.0032	0.021547	1.1
CS11-20	39	1.467227	0.0022	0.281782	0.0030	0.047172	2.6
CS11-20	41	1.467234	0.0022	0.281745	0.0030	0.031858	5.1
CS11-20	42	1.467305	0.0023	0.281795	0.0023	0.014635	5.1
CS11-20	43	1.467240	0.0025	0.281805	0.0032	0.018848	5.4
CS11-20	47	1.467286	0.0031	0.282248	0.0041	0.030513	5.7
CS11-20	49	1.467229	0.0028	0.281767	0.0057	0.028053	6.4
CS11-20	51	1.467275	0.0033	0.281612	0.0050	0.014607	2.4
CS11-20	52	1.467280	0.0025	0.281826	0.0041	0.075843	6.9
CS11-20	55	1.467249	0.0023	0.281903	0.0028	0.010901	13.0
CS11-20	56	1.467327	0.0023	0.281873	0.0030	0.013954	8.4
CS11-20	57	1.467295	0.0033	0.282020	0.0059	0.082364	7.8
CS11-20	60	1.467271	0.0024	0.281691	0.0046	0.013655	3.2
CS11-20	63	1.467160	0.0023	0.281716	0.0035	0.024231	3.7
CS11-20	64	1.467238	0.0021	0.282024	0.0039	0.028447	1.1
CS11-20	66	1.467222	0.0027	0.281846	0.0037	0.130684	6.6
CS11-20	72	1.467196	0.0023	0.281670	0.0027	0.028037	5.5
CS11-20	74	1.467245	0.0025	0.281870	0.0044	0.038115	6.8
CS11-20	75	1.467251	0.0029	0.281842	0.0034	0.021030	2.3
CS11-5	3	1.467207	0.0030	0.282013	0.0048	0.092826	3.1
CS11-5	4	1.467153	0.0034	0.281718	0.0056	0.040960	1.0
CS11-5	5	1.467183	0.0029	0.281544	0.0043	0.031669	1.0
CS11-5	6	1.467255	0.0029	0.282048	0.0052	0.068319	1.6
CS11-5	8	1.467186	0.0028	0.281373	0.0043	0.009628	8.1
CS11-5	11	1.467267	0.0032	0.280947	0.0096	0.025356	3.8
CS11-5	12	1.467242	0.0031	0.281769	0.0056	0.030793	1.6

CS11-5	14	1.467226	0.0037	0.281066	0.0052	0.021878	8.1
CS11-5	15	1.467295	0.0037	0.282191	0.0061	0.034848	1.8
CS11-5	16	1.467125	0.0029	0.281641	0.0056	0.025877	0.8
CS11-5	17	1.467195	0.0033	0.282029	0.0058	0.110781	1.5
CS11-5	21	1.467201	0.0041	0.281607	0.0053	0.020536	3.3
CS11-5	22	1.467214	0.0038	0.281929	0.0059	0.027554	3.9
CS11-5	24	1.467225	0.0035	0.281750	0.0056	0.031428	3.5
CS11-5	26	1.467207	0.0035	0.282158	0.0056	0.033758	4.6
CS11-5	29	1.467280	0.0028	0.281982	0.0061	0.028562	8.1
CS11-5	33	1.467208	0.0032	0.281563	0.0056	0.061664	1.7
CS11-5	34	1.467269	0.0031	0.281742	0.0048	0.031427	2.8
CS11-5	35	1.467265	0.0031	0.281919	0.0053	0.021231	3.9
CS11-5	36	1.467197	0.0034	0.281944	0.0055	0.029517	7.9
CS11-5	37	1.467201	0.0025	0.281931	0.0043	0.039205	1.9
CS11-5	39	1.467183	0.0027	0.282060	0.0055	0.033585	7.1
CS11-5	40	1.467248	0.0031	0.281701	0.0070	0.041822	1.8
CS11-5	41	1.467214	0.0033	0.281704	0.0046	0.071417	5.2
CS11-5	42	1.467172	0.0033	0.281892	0.0042	0.015657	3.4
CS11-5	43	1.467124	0.0031	0.281776	0.0050	0.042929	2.0
CS11-5	45	1.467168	0.0037	0.281597	0.0061	0.047918	0.8
CS11-5	46	1.467167	0.0046	0.281922	0.0048	0.040880	1.7
CS11-5	47	1.467207	0.0040	0.281502	0.0067	0.025780	3.3
CS11-5	50	1.467252	0.0031	0.281599	0.0046	0.045696	1.6
CS11-5	52	1.467243	0.0031	0.281056	0.0047	0.028087	3.3
CS11-5	8b	1.467271	0.0027	0.282060	0.0046	0.057537	3.9
CS11-5	26b	1.467290	0.0030	0.282174	0.0043	0.049204	1.7
CS11-6	1	1.467197	0.0028	0.281841	0.0056	0.076121	1.1
CS11-6	3	1.467167	0.0029	0.281657	0.0055	0.026412	1.9
CS11-6	4	1.467253	0.0034	0.282017	0.0056	0.029774	7.3
CS11-6	5	1.467184	0.0032	0.282149	0.0049	0.074001	0.3
CS11-6	7	1.467172	0.0029	0.281737	0.0048	0.002737	3.4
CS11-6	8	1.467259	0.0027	0.281237	0.0052	0.006690	3.2
CS11-6	9	1.467168	0.0030	0.282164	0.0044	0.091427	8.8
CS11-6	10	1.467198	0.0026	0.281978	0.0046	0.025670	0.6
CS11-6	12	1.467233	0.0028	0.281817	0.0070	0.030300	3.4
CS11-6	13	1.467275	0.0026	0.281732	0.0043	0.028170	0.6
CS11-6	14	1.467161	0.0026	0.282059	0.0049	0.043345	11.5
CS11-6	16	1.467180	0.0026	0.281629	0.0053	0.026669	0.7
CS11-6	15	1.467159	0.0028	0.282215	0.0059	0.031997	2.6
CS11-6	17	1.467186	0.0026	0.282171	0.0052	0.133661	5.9
CS11-6	20	1.467222	0.0025	0.281235	0.0052	0.020421	2.8
CS11-6	22	1.467209	0.0027	0.281837	0.0050	0.021499	2.2
CS11-6	24	1.467166	0.0027	0.281799	0.0053	0.019801	5.3
CS11-6	25	1.467255	0.0032	0.281938	0.0055	0.052848	5.4
CS11-6	27	1.467267	0.0025	0.281826	0.0048	0.060515	2.2
CS11-6	28	1.467261	0.0029	0.281925	0.0055	0.034217	3.5
CS11-6	29	1.467171	0.0032	0.282068	0.0053	0.031659	3.5
CS11-6	30	1.467112	0.0028	0.281758	0.0044	0.042914	2.3
CS11-6	31	1.467166	0.0034	0.282088	0.0045	0.021296	7.3
CS11-6	32	1.467174	0.0027	0.281759	0.0046	0.039311	1.7
CS11-6	34	1.467253	0.0029	0.281466	0.0039	0.034524	4.6
CS11-6	35	1.467169	0.0027	0.281706	0.0043	0.033552	2.8
CS11-6	37	1.467200	0.0029	0.282159	0.0056	0.024874	2.9
CS11-6	38	1.467163	0.0026	0.281678	0.0046	0.034800	3.1
CS11-6	39	1.467198	0.0029	0.282131	0.0049	0.047985	2.5
CS11-6	40	1.467185	0.0029	0.282071	0.0049	0.034469	1.8
CS11-6	41	1.467221	0.0028	0.282041	0.0056	0.042461	7.9

CS11-6	42	1.467218	0.0027	0.281676	0.0049	0.024915	0.9
CS11-6	45	1.467207	0.0039	0.282126	0.0052	0.038705	0.7
CS11-6	46	1.467209	0.0029	0.281585	0.0047	0.022458	1.2
CS11-6	47	1.467166	0.0026	0.282124	0.0050	0.024232	2.2
CS11-6	48	1.467195	0.0028	0.280899	0.0053	0.034290	3.3
CS11-6	50	1.467178	0.0028	0.282195	0.0058	0.144383	2.9
CS11-6	51	1.467201	0.0030	0.282017	0.0049	0.022785	1.7
CS11-6	16b	1.467212	0.0028	0.281716	0.0040	0.022294	3.3
CS11-6	34b	1.467246	0.0027	0.281486	0.0057	0.057538	3.1
CS11-6	34c	1.467255	0.0026	0.281469	0.0041	0.021398	1.1
CS11-1	1	1.467225	0.0028	0.282176	0.0064	0.040141	3.1
CS11-1	5	1.467195	0.0027	0.282093	0.0046	0.027295	2.1
CS11-1	6	1.467251	0.0027	0.282138	0.0050	0.072041	2.9
CS11-1	8	1.467192	0.0033	0.281918	0.0043	0.055772	3.5
CS11-1	9	1.467235	0.0032	0.282106	0.0046	0.071134	7.1
CS11-1	10	1.467228	0.0027	0.281970	0.0051	0.059086	6.9
CS11-1	11	1.467149	0.0027	0.282097	0.0053	0.026393	3.2
CS11-1	12	1.467197	0.0028	0.281931	0.0044	0.050399	4.6
CS11-1	13	1.467277	0.0027	0.282136	0.0062	0.031307	4.4
CS11-1	14	1.467213	0.0036	0.282148	0.0044	0.044704	5.7
CS11-1	15	1.467122	0.0038	0.282075	0.0039	0.024185	3.7
CS11-1	16	1.467221	0.0037	0.282024	0.0050	0.144475	5.3
CS11-1	17	1.467201	0.0028	0.281939	0.0071	0.033279	5.1
CS11-1	18	1.467161	0.0037	0.282111	0.0046	0.025978	5.2
CS11-1	19	1.467188	0.0032	0.281976	0.0053	0.106651	3.7
CS11-1	21	1.467215	0.0031	0.282118	0.0051	0.032330	2.7
CS11-1	22	1.467269	0.0025	0.281962	0.0051	0.056068	2.6
CS11-1	23	1.467129	0.0032	0.282058	0.0057	0.043642	1.8
CS11-1	24	1.467187	0.0027	0.281964	0.0046	0.036535	3.9
CS11-1	25	1.467231	0.0036	0.282125	0.0053	0.026526	4.7
CS11-1	26	1.467161	0.0030	0.282144	0.0035	0.035368	7.7
CS11-1	27	1.467147	0.0033	0.282084	0.0046	0.020496	2.4
CS11-1	28	1.467243	0.0030	0.282178	0.0062	0.050935	10.6
CS11-1	29	1.467235	0.0033	0.282111	0.0064	0.019626	2.3
CS11-1	30	1.467169	0.0028	0.282084	0.0048	0.022521	2.4
CS11-1	31	1.467230	0.0031	0.282046	0.0059	0.034184	1.9
CS11-1	32	1.467155	0.0025	0.282112	0.0030	0.019892	4.2
CS11-1	33	1.467109	0.0031	0.281966	0.0041	0.081359	3.0
CS11-1	34	1.467223	0.0024	0.282200	0.0051	0.077932	7.8
CS11-1	37	1.467176	0.0036	0.281940	0.0066	0.036791	3.0
CS11-1	38	1.467191	0.0033	0.281938	0.0044	0.040631	3.5
CS11-1	39	1.467182	0.0031	0.282068	0.0035	0.025900	4.0
CS11-1	42	1.467177	0.0030	0.282033	0.0051	0.031747	4.7
CS11-1	44	1.467115	0.0025	0.282015	0.0048	0.025379	5.0
CS11-1	46	1.467116	0.0028	0.281991	0.0046	0.028963	11.3
CS11-1	47	1.467202	0.0041	0.282173	0.0058	0.037197	8.5
CS11-1	48	1.467243	0.0028	0.281947	0.0035	0.031754	2.8
CS11-1	51	1.467142	0.0035	0.282063	0.0058	0.022752	0.7
CS11-1	52	1.467074	0.0037	0.281926	0.0057	0.034011	2.8
CS11-1	54	1.467207	0.0031	0.282236	0.0043	0.026522	4.4
CS11-1	55	1.467232	0.0031	0.281994	0.0051	0.059482	9.8
CS11-1	56	1.467222	0.0033	0.282101	0.0050	0.027568	4.6
CS11-1	57	1.467169	0.0036	0.282061	0.0050	0.036197	11.9
CS11-1	58	1.467104	0.0037	0.282285	0.0066	0.082503	2.4
CS11-1	60	1.467209	0.0032	0.282163	0.0046	0.072300	5.9
CS11-1	62	1.467186	0.0034	0.282172	0.0053	0.027316	7.3
CS11-1	63	1.467172	0.0043	0.282114	0.0048	0.030345	5.0

CS11-3	1	1.467228	0.0031	0.282121	0.0048	0.031636	3.3
CS11-3	3	1.467158	0.0040	0.281957	0.0044	0.034931	5.7
CS11-3	4	1.467267	0.0033	0.282093	0.0035	0.025584	3.0
CS11-3	5	1.467236	0.0034	0.282075	0.0034	0.042873	3.2
CS11-3	6	1.467239	0.0034	0.282112	0.0041	0.048148	0.8
CS11-3	7	1.467169	0.0031	0.282202	0.0050	0.024452	2.3
CS11-3	8	1.467133	0.0035	0.281959	0.0060	0.044282	3.9
CS11-3	9	1.467203	0.0035	0.282217	0.0044	0.045990	4.0
CS11-3	10	1.467131	0.0027	0.282123	0.0076	0.037614	1.3
CS11-3	11	1.467266	0.0034	0.282108	0.0044	0.037759	14.1
CS11-3	16	1.467311	0.0035	0.282262	0.0050	0.070439	10.3
CS11-3	17	1.467226	0.0041	0.281913	0.0048	0.044017	3.2
CS11-3	18	1.467224	0.0039	0.282097	0.0064	0.047409	1.8
CS11-3	19	1.467291	0.0039	0.282001	0.0080	0.074261	0.7
CS11-3	20	1.467217	0.0033	0.282196	0.0080	0.046825	8.0
CS11-3	21	1.467210	0.0032	0.282090	0.0039	0.019774	2.0
CS11-3	22	1.467252	0.0035	0.282172	0.0062	0.047083	0.8
CS11-3	24	1.467304	0.0043	0.281986	0.0062	0.095996	1.1
CS11-3	25	1.467248	0.0040	0.281934	0.0062	0.073369	2.2
CS11-3	26	1.467233	0.0037	0.282088	0.0048	0.029253	8.6
CS11-3	27	1.467224	0.0028	0.282256	0.0053	0.028083	3.4
CS11-3	29	1.467231	0.0032	0.281981	0.0057	0.069393	0.7
CS11-3	30	1.467296	0.0030	0.282057	0.0051	0.092213	1.6
CS11-3	31	1.467218	0.0027	0.281893	0.0035	0.035670	11.0
CS11-3	32	1.467265	0.0034	0.282096	0.0048	0.025736	5.0
CS11-3	33	1.467273	0.0033	0.282294	0.0048	0.050506	4.3
CS11-3	34	1.467204	0.0028	0.282133	0.0048	0.044647	5.8
CS11-3	35	1.467280	0.0038	0.281890	0.0057	0.016795	4.7
CS11-3	36	1.467250	0.0031	0.282327	0.0053	0.157182	8.3
CS11-3	37	1.467315	0.0034	0.281943	0.0046	0.078981	1.1
CS11-3	39	1.467243	0.0028	0.281941	0.0030	0.041052	3.1
CS11-3	40	1.467266	0.0036	0.282129	0.0032	0.024806	9.6
CS11-3	41	1.467275	0.0030	0.282107	0.0051	0.020350	3.4
CS11-3	42	1.467255	0.0028	0.282071	0.0057	0.013392	1.0
CS11-3	43	1.467242	0.0030	0.282131	0.0046	0.034636	2.1
CS11-3	44	1.467233	0.0036	0.282291	0.0037	0.040474	2.6
CS11-3	45	1.467241	0.0028	0.282308	0.0048	0.102926	2.6
CS11-3	46	1.467202	0.0024	0.282086	0.0048	0.027737	10.8
CS11-3	47	1.467258	0.0026	0.282229	0.0055	0.052240	1.7
CS11-3	48	1.467232	0.0032	0.282144	0.0046	0.033895	4.3
CS11-3	49	1.467180	0.0031	0.282196	0.0050	0.050664	15.0
CS11-3	51	1.467192	0.0039	0.282288	0.0028	0.018867	2.3
CS11-3	52	1.467240	0.0034	0.281905	0.0044	0.012951	2.4
CS11-3	53	1.467197	0.0034	0.281909	0.0053	0.026786	4.6
CS11-3	55	1.467201	0.0032	0.281952	0.0039	0.014390	1.4
CS11-3	56	1.467275	0.0033	0.282116	0.0050	0.034621	17.2
CS11-3	57	1.467250	0.0037	0.282229	0.0062	0.110046	8.0
CS11-3	58	1.467192	0.0034	0.282131	0.0051	0.016617	2.0
CS11-3	72	1.467263	0.0041	0.282132	0.0053	0.053980	4.7
CS11-13	1	1.467141	0.0029	0.281808	0.0049	0.053845	9.4
CS11-13	2	1.467192	0.0029	0.281968	0.0041	0.036717	2.8
CS11-13	6	1.467167	0.0031	0.282054	0.0055	0.001130	4.2
CS11-13	9	1.467264	0.0032	0.282185	0.0045	0.029607	0.7
CS11-13	10	1.467173	0.0036	0.282182	0.0043	0.041809	0.5
CS11-13	11	1.467272	0.0035	0.281727	0.0054	0.054334	2.1
CS11-13	12	1.467163	0.0030	0.282020	0.0063	0.033055	2.0

CS11-13	14	1.467220	0.0036	0.281852	0.0052	0.061468	5.3
CS11-13	15	1.467209	0.0032	0.282101	0.0052	0.019399	1.0
CS11-13	16	1.467163	0.0032	0.281833	0.0055	0.050417	2.9
CS11-13	19	1.467192	0.0029	0.281856	0.0060	0.086778	2.9
CS11-13	26	1.467186	0.0032	0.281973	0.0051	0.008419	2.7
CS11-13	28	1.467191	0.0032	0.281791	0.0071	0.049021	2.4
CS11-13	29	1.467211	0.0029	0.281970	0.0046	0.024907	2.3
CS11-13	30	1.467248	0.0038	0.282189	0.0046	0.053925	4.1
CS11-13	31	1.467174	0.0032	0.281965	0.0046	0.031768	6.8
CS11-13	32	1.467103	0.0034	0.281635	0.0054	0.013256	4.7
CS11-13	33	1.467180	0.0042	0.281861	0.0063	0.040624	2.4
CS11-13	35	1.467259	0.0030	0.282194	0.0055	0.024999	3.0
CS11-13	36	1.467262	0.0033	0.282143	0.0049	0.025600	2.0
CS11-13	37	1.467171	0.0032	0.282121	0.0048	0.052815	3.2
CS11-13	38	1.467252	0.0029	0.281773	0.0046	0.028685	13.7
CS11-13	39	1.467193	0.0027	0.281783	0.0067	0.029248	5.5
CS11-13	41	1.467190	0.0031	0.282089	0.0048	0.073881	10.9
CS11-13	42	1.467202	0.0032	0.282032	0.0045	0.017499	2.3
CS11-13	43	1.467213	0.0035	0.281982	0.0054	0.040363	1.3
CS11-13	44	1.467223	0.0040	0.281901	0.0052	0.035841	2.6
CS11-13	45	1.467187	0.0035	0.281873	0.0058	0.139845	1.4
CS11-13	46	1.467184	0.0031	0.281687	0.0052	0.093349	5.5
CS11-13	47	1.467205	0.0033	0.281719	0.0048	0.029054	1.0
CS11-13	49	1.467216	0.0029	0.281961	0.0040	0.036565	2.4
CS11-13	51	1.467247	0.0027	0.281849	0.0057	0.041563	2.1
CS11-13	54	1.467192	0.0028	0.281976	0.0039	0.016912	6.0
CS11-13	55	1.467219	0.0033	0.282218	0.0048	0.050897	2.2
CS11-13	56	1.467207	0.0038	0.282068	0.0054	0.009862	4.1
CS11-13	57	1.467233	0.0033	0.282364	0.0067	0.093263	2.2
CS11-13	59	1.467143	0.0030	0.281782	0.0045	0.044381	6.3
CS11-13	62	1.467154	0.0038	0.281742	0.0061	0.031657	2.8
CS11-13	67	1.467194	0.0034	0.281745	0.0054	0.045411	3.3
CS11-13	69	1.467179	0.0032	0.282031	0.0048	0.035635	3.3
CS11-13	71	1.467218	0.0032	0.282181	0.0048	0.007860	3.4
CS11-13	72	1.467156	0.0032	0.281588	0.0058	0.031871	4.5
CS11-13	73	1.467204	0.0027	0.281124	0.0054	0.017936	1.9
CS11-13	74	1.467187	0.0033	0.282015	0.0056	0.010300	6.1
CS11-13	75	1.467139	0.0034	0.281842	0.0060	0.054618	4.6
CS11-13	77	1.467192	0.0034	0.282148	0.0060	0.041166	2.0
CS11-13	78	1.467269	0.0034	0.281795	0.0055	0.040348	3.6
CS11-13	79	1.467116	0.0029	0.282175	0.0044	0.036584	4.0
CS11-13	80	1.467143	0.0036	0.282049	0.0043	0.031420	3.6
CS11-13	82	1.467148	0.0030	0.281734	0.0051	0.024833	3.3
CS11-13	83	1.467221	0.0034	0.282043	0.0055	0.040356	2.5
CS11-13	84	1.467175	0.0027	0.281817	0.0041	0.020420	10.8
CS11-13	85	1.467231	0.0036	0.282143	0.0061	0.040879	2.4
CS11-13	14redo	1.467193	0.0034	0.281828	0.0046	0.044011	3.5
CS11-9	1	1.467198	0.0029	0.282228	0.0034	0.018476	3.1
CS11-9	2	1.467163	0.0026	0.282155	0.0037	0.034019	3.8
CS11-9	3	1.467300	0.0029	0.282129	0.0037	0.030379	3.9
CS11-9	4	1.467206	0.0029	0.282184	0.0041	0.029764	2.0
CS11-9	6	1.467226	0.0031	0.282158	0.0044	0.021396	3.3
CS11-9	8	1.467207	0.0029	0.282174	0.0039	0.019047	0.6
CS11-9	9	1.467239	0.0031	0.282176	0.0046	0.025787	3.2
CS11-9	10	1.467219	0.0029	0.282181	0.0041	0.031146	2.8
CS11-9	12	1.467226	0.0030	0.282162	0.0041	0.037892	2.6
CS11-9	13	1.467243	0.0026	0.282213	0.0046	0.036264	3.5

CS11-9	15	1.467272	0.0026	0.282136	0.0041	0.029897	2.4
CS11-9	16	1.467223	0.0035	0.282274	0.0035	0.057451	1.6
CS11-9	17	1.467190	0.0027	0.282188	0.0039	0.024448	4.3
CS11-9	18	1.467189	0.0030	0.282145	0.0048	0.024014	2.7
CS11-9	19	1.467202	0.0029	0.282203	0.0035	0.033902	3.6
CS11-9	20	1.467278	0.0030	0.282315	0.0048	0.077737	2.2
CS11-9	21	1.467253	0.0029	0.282165	0.0039	0.029982	1.7
CS11-9	22	1.467163	0.0029	0.282211	0.0060	0.033625	3.1
CS11-9	23	1.467177	0.0028	0.282203	0.0041	0.021066	4.9
CS11-9	24	1.467206	0.0029	0.282165	0.0044	0.052679	2.1
CS11-9	25	1.467158	0.0029	0.282126	0.0034	0.017482	5.4
CS11-9	27	1.467187	0.0026	0.282141	0.0034	0.029437	2.6
CS11-9	29	1.467189	0.0028	0.282186	0.0043	0.028588	4.6
CS11-9	31	1.467277	0.0026	0.282202	0.0050	0.026444	0.8
CS11-9	32	1.467176	0.0033	0.282156	0.0051	0.021691	1.8
CS11-9	34	1.467228	0.0027	0.282128	0.0050	0.029778	2.0
CS11-9	35	1.467234	0.0030	0.282162	0.0037	0.024408	6.5
CS11-9	36	1.467195	0.0028	0.282155	0.0035	0.011122	2.0
CS11-9	37	1.467219	0.0037	0.282171	0.0041	0.015459	2.1
CS11-9	38	1.467233	0.0029	0.282160	0.0041	0.026863	1.3
CS11-9	39	1.467296	0.0027	0.282167	0.0046	0.025223	3.8
CS11-9	40	1.467251	0.0026	0.282117	0.0028	0.035927	1.8
CS11-9	41	1.467292	0.0028	0.282137	0.0043	0.030030	0.8
CS11-9	44	1.467243	0.0032	0.282133	0.0039	0.024575	1.2
CS11-9	45	1.467254	0.0030	0.282132	0.0032	0.032695	7.5
CS11-9	46	1.467207	0.0030	0.282130	0.0046	0.020380	1.6
CS11-9	47	1.467214	0.0027	0.282131	0.0046	0.024152	1.4
CS11-9	50	1.467210	0.0027	0.282203	0.0037	0.028245	2.0
CS11-9	51	1.467193	0.0029	0.282206	0.0044	0.030066	6.4
CS11-9	52	1.467216	0.0027	0.282232	0.0043	0.016669	1.8
CS11-9	53	1.467259	0.0028	0.282229	0.0039	0.017256	1.3
CS11-9	58	1.467215	0.0028	0.281925	0.0037	0.039541	2.4
CS11-9	63	1.467197	0.0028	0.282208	0.0039	0.058375	1.8
CS11-9	69	1.467272	0.0025	0.282186	0.0044	0.031190	1.1
CS11-9	75	1.467189	0.0031	0.281936	0.0034	0.028339	2.6
CS11-9	85	1.467193	0.0029	0.282170	0.0048	0.036839	1.5
CS11-9	100	1.467193	0.0033	0.282197	0.0039	0.038440	1.7
CS11-9	105	1.467198	0.0026	0.282144	0.0039	0.018625	1.6
CS11-9	110	1.467184	0.0026	0.282070	0.0032	0.020803	1.9
CS11-9	112	1.467171	0.0034	0.282342	0.0046	0.175991	2.8

176Lu/177Hf	1s%	U-Pb Spot	Age	1s	disc	eHf	2s	2s+	Hf/Hf (t)
0.000785	2.1	Siam1_1	1989	12.3	-2.7	-11.3	1.2	1.9	0.281198
0.000754	7.1	Siam1_4	2153	10.7	-0.7	-7.8	1.2	2.1	0.281188
0.000276	3.9	Siam1_5	1909	34.6	-2.0	-10.0	1.4	3.1	0.281285
0.000464	2.0	Siam1_6	1926	5.6	-4.1	-0.6	1.1	1.5	0.281539
0.000036	2.0	Siam1_7	1877	4.3	-3.5	-2.1	1.1	1.4	0.281528
0.001084	3.0	Siam1_8	2155	12.0	-1.5	-6.9	1.5	2.3	0.281214
0.000720	5.3	Siam1_9	2138	20.9	1.0	-8.4	1.3	2.6	0.281181
0.000204	7.8	Siam1_10	1898	4.3	2.0	-1.7	1.0	1.3	0.281526
0.000593	2.4	Siam1_11	1997	11.5	1.4	6.2	1.2	1.9	0.281684
0.000064	2.5	Siam1_13	2619	14.4	1.1	-6.5	1.3	2.4	0.280920
0.000635	2.5	Siam1_18	2159	12.7	0.7	-13.0	1.2	2.0	0.281039
0.001627	2.5	Siam1_20	2142	4.4	0.4	-4.9	1.0	1.5	0.281278
0.001103	3.0	Siam1_14	1920	8.4	4.1	1.3	1.3	1.8	0.281597
0.000429	3.3	Siam1_22	2131	24.6	2.0	-9.9	1.8	3.2	0.281143
0.000278	2.8	Siam1_23	1855	4.1	1.6	-5.7	1.2	1.4	0.281442
0.001113	3.1	Siam1_24	2162	24.2	0.6	-10.4	1.5	3.0	0.281110
0.000650	2.8	Siam1_25	2147	12.2	-4.3	-6.5	1.5	2.4	0.281228
0.000460	3.3	Siam1_26	1979	5.7	6.0	4.3	1.2	1.6	0.281643
0.000882	3.3	Siam1_29	1896	7.9	-0.1	-6.7	1.0	1.5	0.281387
0.001163	2.3	Siam1_30	2840	3.1	-1.3	-1.7	1.1	2.0	0.280911
0.000741	2.2	Siam1_31	1879	13.0	-4.2	-0.2	1.7	2.4	0.281582
0.000136	4.8	Siam1_32	2553	7.1	-2.5	-9.5	1.3	2.1	0.280879
0.000769	6.1	Siam1_33	2129	18.7	-3.8	-5.8	1.2	2.4	0.281262
0.000085	2.4	Siam1_34	2467	17.7	-5.1	-12.4	1.4	2.6	0.280853
0.000589	3.8	Siam1_35	1917	8.9	-1.7	2.8	1.2	1.8	0.281642
0.000572	2.2	Siam1_36	2783	5.6	-1.5	1.3	1.3	2.2	0.281033
0.000445	7.6	Siam1_37	2718	3.3	1.0	-1.2	1.2	2.0	0.281004
0.000362	3.2	Siam1_38	1906	4.3	-0.5	-0.3	1.2	1.5	0.281562
0.000053	2.1	Siam1_39	2027	14.0	1.1	-16.6	1.2	2.0	0.281023
0.000492	2.1	Siam1_40	2117	32.4	-4.4	-10.8	1.2	2.9	0.281128
0.000334	2.6	Siam1_41	1892	5.8	-1.8	-7.0	1.2	1.5	0.281381
0.000077	2.5	Siam1_42	1851	4.7	-2.1	-3.0	1.2	1.5	0.281521
0.000142	3.5	Siam1_44	2713	2.7	-1.6	-5.5	1.2	1.9	0.280887
0.001007	2.2	Siam1_45	2146	7.8	-1.7	-4.7	1.6	2.2	0.281281
0.000386	3.3	Siam1_46	2139	16.5	-1.6	-6.1	1.2	2.3	0.281246
0.001555	4.1	Siam1_47	2656	12.0	43.8	2.1	1.1	2.4	0.281137
0.000711	2.2	Siam1_48	2131	8.1	-1.7	-8.2	1.2	1.8	0.281191
0.000301	2.7	Siam1_49	1969	9.8	-1.4	3.8	1.1	1.7	0.281634
0.000305	2.1	Siam1_50	1892	17.9	-1.6	0.1	1.7	2.6	0.281581
0.001069	2.5	Siam1_51	2072	15.9	8.5	2.6	1.2	2.2	0.281535
0.000511	2.1	Siam1_52	2773	8.5	-2.0	-2.3	1.1	2.1	0.280937
0.000659	2.8	Siam1_53	2163	14.5	-3.1	-12.6	1.3	2.2	0.281047
0.000360	2.1	Siam1_54	1899	8.5	-1.4	-4.2	1.2	1.7	0.281455
0.000783	2.2	Siam1_55	2298	5.7	-0.4	0.5	1.4	2.0	0.281328
0.000241	2.2	Siam1_56	2735	5.7	-0.1	-8.6	1.0	1.9	0.280785
0.000533	2.2	Siam1_57	2126	17.7	0.0	-10.7	1.2	2.3	0.281124
0.000709	2.1	Siam1_59	2740	3.1	0.1	-6.7	1.3	2.0	0.280835
0.000465	3.0	Siam1_72	2128	16.9	-1.8	-8.4	1.2	2.2	0.281187
0.001208	2.1	Siam1_73	1917	5.3	-0.5	-0.7	1.2	1.6	0.281544
0.000529	2.2	Siam1_74	1925	4.2	2.1	-8.8	1.3	1.6	0.281310
0.000950	2.8	Siam1_75	3218	4.5	1.1	1.1	1.2	2.4	0.280737
0.001346	2.1	Siam1_76	1917	7.8	-2.7	6.5	1.3	1.8	0.281746
0.000766	2.1	Siam1_77	1882	8.8	0.3	-11.2	1.0	1.5	0.281269
0.000753	2.3	Siam1_78	2149	10.8	-0.2	-8.6	1.2	1.9	0.281170
0.000219	2.2	Siam1_79	2724	5.0	-1.4	-3.7	1.0	1.8	0.280930
0.000817	2.5	Siam1_80	2143	14.4	-0.6	-3.8	0.9	1.9	0.281309

0.000833	2.2	Siam1_86	2744	5.0	-1.4	-11.0	1.3	2.1	0.280713
0.000394	2.9	Siam1_88	2132	16.7	-3.1	-12.4	1.2	2.2	0.281074
0.000543	2.2	Siam1_89	2143	11.9	-0.6	-8.9	1.1	1.9	0.281164
0.000973	3.2	Siam1_90	2141	10.9	0.4	-8.4	1.2	2.0	0.281179
0.000230	2.5	Siam1_91	2959	7.6	-1.1	-1.5	1.2	2.3	0.280838
0.000372	3.6	Siam1_92	2159	19.6	1.5	-3.7	1.0	2.1	0.281301
0.000792	2.5	Siam1_93	1903	6.7	-0.1	0.0	1.2	1.6	0.281572
0.000980	2.2	Siam1_94	2138	8.3	0.1	-4.6	1.0	1.7	0.281288
0.000738	2.3	Siam1_96	2150	5.7	2.6	-9.8	1.1	1.6	0.281135
0.000290	2.2	Siam1_97	2663	3.5	2.9	-5.9	1.3	2.0	0.280909
0.000722	2.2	Siam1_95	1904	14.9	0.4	0.0	1.1	1.9	0.281570
0.000474	2.6	Siam1_98	2776	2.3	-0.4	-3.6	1.1	1.9	0.280898
0.001236	4.3	Siam1_100	2144	7.5	1.6	-8.9	1.0	1.7	0.281163
0.000552	2.6	Siam1_101	2917	3.1	0.9	-0.4	1.2	2.1	0.280897
0.000241	2.5	Siam1_102	1874	3.4	1.1	-8.3	1.2	1.5	0.281357
0.000634	2.1	Siam1_111	1882	4.4	-1.0	-8.7	0.9	1.3	0.281340
0.001131	2.2	Siam1_112	2716	5.9	-0.5	-2.8	1.0	1.9	0.280959
0.000688	6.4	CS11-18_1	1096	14.6	5.8	-0.7	1.1	1.5	0.282071
0.000550	3.2	CS11-18_2	1762	8.6	0.5	2.0	1.0	1.5	0.281719
0.000492	3.9	CS11-18_3	1803	11.6	2.8	4.3	1.0	1.6	0.281756
0.000345	6.5	CS11-18_4	2684	5.0	1.6	-0.7	0.9	1.7	0.281041
0.001151	5.8	CS11-18_5	1792	8.9	1.8	1.5	1.3	1.9	0.281685
0.001727	4.3	CS11-18_7	1840	7.6	-1.5	1.5	1.1	1.7	0.281654
0.000696	3.5	CS11-18_8	1928	7.8	3.4	-15.5	0.9	1.4	0.281119
0.000812	4.9	CS11-18_9	1811	8.5	1.2	1.5	0.9	1.4	0.281672
0.000632	4.6	CS11-18_10	1829	6.1	0.5	2.8	0.8	1.2	0.281698
0.000831	12.1	CS11-18_11	1802	7.9	0.5	3.2	2.8	3.4	0.281728
0.000930	3.6	CS11-18_12	1807	6.4	-0.5	3.0	0.8	1.2	0.281717
0.000886	3.1	CS11-18_13	1809	5.8	-1.3	3.0	0.9	1.3	0.281716
0.001745	3.9	CS11-18_14	2720	5.8	1.5	0.4	1.4	2.5	0.281049
0.000549	4.2	CS11-18_15	2686	5.1	4.6	-0.8	1.3	2.2	0.281036
0.000613	3.0	CS11-18_16	1826	6.0	2.8	1.0	0.9	1.2	0.281648
0.000895	3.7	CS11-18_17	1792	8.3	0.8	1.8	1.0	1.5	0.281693
0.000930	3.2	CS11-18_18	1822	6.0	-1.9	0.8	1.0	1.4	0.281646
0.000446	3.1	CS11-18_19	1820	13.4	6.1	3.0	1.2	1.9	0.281709
0.001533	3.2	CS11-18_20	1811	6.5	-0.8	1.9	1.1	1.6	0.281685
0.001794	3.9	CS11-18_21	1822	5.8	0.0	1.5	0.9	1.4	0.281667
0.000423	5.6	CS11-18_22	1779	8.8	3.5	1.6	0.9	1.4	0.281698
0.001168	5.8	CS11-18_23	2700	5.8	1.1	-0.2	0.9	2.0	0.281044
0.000721	3.3	CS11-18_24	1820	5.7	2.1	-0.2	0.7	1.0	0.281618
0.000783	3.9	CS11-18_26	1805	5.9	1.9	1.9	1.1	1.5	0.281688
0.000664	4.5	CS11-18_27	2624	5.1	4.8	-1.5	1.1	1.9	0.281057
0.000726	3.1	CS11-18_29	1794	11.9	3.0	0.9	0.8	1.4	0.281666
0.000446	3.8	CS11-18_30	1794	10.5	4.2	3.9	1.4	1.9	0.281752
0.000921	3.2	CS11-18_32	1812	7.2	-0.4	0.2	1.1	1.5	0.281635
0.000009	11.5	CS11-18_33	1723	11.1	2.5	-0.3	0.8	1.3	0.281680
0.000479	5.0	CS11-18_35	1774	6.0	-0.8	-6.3	0.8	1.1	0.281478
0.000607	7.6	CS11-18_36	2645	5.2	0.6	-3.2	1.0	1.9	0.280997
0.000721	3.0	CS11-18_37	1755	4.9	-1.0	1.9	1.1	1.4	0.281720
0.000643	12.2	CS11-18_38	2707	5.4	2.6	-0.4	1.1	2.2	0.281034
0.001253	8.6	CS11-18_39	2693	6.2	0.2	0.8	1.2	2.4	0.281077
0.001889	3.4	CS11-18_40	1795	5.9	-2.3	0.9	1.1	1.6	0.281665
0.001064	6.3	CS11-18_41	2437	6.1	0.8	-1.4	1.2	2.1	0.281184
0.001598	3.5	CS11-18_42	1784	5.6	-2.1	3.0	1.0	1.4	0.281733
0.000657	4.7	CS11-18_43	1785	6.3	2.1	1.3	0.6	1.0	0.281683
0.000554	7.5	CS11-18_44	2634	7.4	0.0	-1.8	0.9	1.9	0.281043
0.001367	4.0	CS11-18_46	1808	5.0	4.6	1.9	0.8	1.2	0.281687

0.000684	3.1	CS11-18_47	2630	6.7	3.1	-3.2	0.8	1.7	0.281007
0.000432	3.9	CS11-18_48	2673	5.0	0.5	-2.9	0.9	1.7	0.280985
0.000518	4.9	CS11-18_49	2601	5.2	0.5	-2.6	0.8	1.6	0.281041
0.000501	3.0	CS11-18_50	2576	5.0	2.7	-3.5	0.8	1.5	0.281033
0.001637	6.0	CS11-18_53	2746	5.9	-1.2	-1.1	0.8	2.0	0.280990
0.000351	17.7	CS11-18_63	2706	7.0	4.9	-0.8	0.8	1.9	0.281022
0.000542	10.1	CS11-18_64	2698	5.7	0.1	0.4	1.1	2.1	0.281063
0.000460	3.0	CS11-18_65	2748	4.8	0.8	-0.1	0.8	1.7	0.281014
0.000467	3.6	CS11-18_66	2713	6.3	0.4	0.9	0.9	1.8	0.281066
0.002022	9.8	CS11-18_72	2955	7.0	3.3	1.7	0.9	2.7	0.280928
0.000683	3.1	CS11-19_1	1611	6.7	-1.7	-4.0	1.0	1.3	0.281647
0.001185	4.4	CS11-19_3	1650	11.1	1.2	-0.9	1.0	1.6	0.281709
0.000919	3.5	CS11-19_5	1663	18.2	4.0	1.4	1.4	2.2	0.281765
0.000942	3.1	CS11-19_6	1354	12.3	2.7	1.7	0.9	1.3	0.281975
0.000853	3.7	CS11-19_8	1113	12.3	1.9	4.0	1.1	1.3	0.282192
0.001072	4.4	CS11-19_9	1809	8.4	-1.4	-0.6	0.9	1.4	0.281614
0.000873	6.7	CS11-19_10	1353	8.8	1.0	-0.5	0.9	1.2	0.281914
0.001426	3.5	CS11-19_12	1712	12.1	0.6	-0.8	0.9	1.6	0.281674
0.000831	3.4	CS11-19_13	1457	11.4	1.8	4.8	0.8	1.2	0.281994
0.000781	3.1	CS11-19_14	1676	11.1	1.6	0.0	0.9	1.4	0.281717
0.001884	4.0	CS11-19_16	1659	12.7	2.5	0.3	0.9	1.5	0.281737
0.001061	10.0	CS11-19_18	1198	11.7	1.9	3.4	0.8	1.2	0.282121
0.001819	3.1	CS11-19_19	1387	7.8	-0.3	7.0	1.0	1.2	0.282102
0.001814	4.1	CS11-19_20	1661	11.7	-0.3	1.3	1.1	1.7	0.281764
0.000854	3.5	CS11-19_23	1442	9.7	-2.6	4.1	1.0	1.3	0.281986
0.001855	3.3	CS11-19_24	1860	7.0	-7.2	3.1	1.0	1.5	0.281687
0.000421	4.0	CS11-19_25	1923	13.5	-0.2	-8.3	0.6	1.3	0.281324
0.000874	3.6	CS11-19_26	1672	6.1	-2.4	1.1	0.9	1.2	0.281752
0.002638	3.2	CS11-19_27	1681	9.3	-2.8	4.7	1.5	2.1	0.281848
0.000566	3.3	CS11-19_28	1776	16.6	0.4	3.7	1.2	2.0	0.281757
0.000667	3.0	CS11-19_30	1623	13.5	-2.5	2.1	1.1	1.7	0.281811
0.000417	4.0	CS11-19_31	1755	8.2	-1.4	3.0	0.8	1.3	0.281752
0.000772	3.8	CS11-19_32	1678	6.2	-1.4	0.9	1.2	1.5	0.281744
0.000394	3.1	CS11-19_33	1490	12.3	4.3	4.0	0.9	1.3	0.281952
0.001339	3.4	CS11-19_35	1651	6.3	2.5	0.8	1.2	1.5	0.281757
0.001203	5.6	CS11-19_38	1656	6.8	1.9	-0.6	0.5	1.0	0.281715
0.000646	3.2	CS11-19_39	1333	15.0	0.9	0.6	1.0	1.5	0.281957
0.000723	9.6	CS11-19_40	1697	16.9	3.4	3.5	0.9	1.8	0.281803
0.000491	12.2	CS11-19_41	1771	7.9	0.9	1.5	0.8	1.3	0.281699
0.000757	5.5	CS11-19_42	1792	16.8	1.9	-16.2	0.8	1.7	0.281187
0.000856	3.5	CS11-19_43	1649	13.3	1.9	0.7	0.8	1.4	0.281756
0.000585	3.3	CS11-19_44	1702	7.8	0.8	1.5	0.7	1.1	0.281743
0.000931	3.6	CS11-19_45	1654	9.0	0.6	-0.8	0.8	1.3	0.281710
0.001598	5.1	CS11-19_46	1424	14.8	-3.4	7.9	0.8	1.4	0.282104
0.000969	4.1	CS11-19_47	1748	11.4	0.4	-0.4	0.8	1.4	0.281660
0.000419	4.9	CS11-19_48	1683	6.7	-0.6	1.1	1.0	1.3	0.281744
0.002352	3.4	CS11-19_49	1661	8.2	-1.0	0.3	0.9	1.4	0.281735
0.000860	4.1	CS11-19_50	2004	11.3	-0.6	0.7	0.8	1.6	0.281526
0.000276	3.2	CS11-19_51	2025	9.9	1.1	-6.7	0.8	1.4	0.281303
0.000346	3.1	CS11-19_52	2006	5.1	0.0	-0.8	0.8	1.2	0.281481
0.002789	3.9	CS11-19_54	1667	7.7	-3.7	2.9	1.2	1.8	0.281804
0.000625	8.7	CS11-19_55	1830	6.5	-6.6	3.2	0.7	1.2	0.281708
0.000572	3.2	CS11-19_57	1542	8.5	0.3	-4.0	0.9	1.2	0.281692
0.001682	3.9	CS11-19_58	1676	7.0	-5.1	3.7	0.8	1.2	0.281823
0.000695	9.0	CS11-19_60	1445	8.2	1.0	6.0	0.8	1.2	0.282036
0.000662	3.2	CS11-19_63	1570	9.9	4.4	6.7	1.1	1.5	0.281977
0.000771	3.2	CS11-19_61	1328	5.7	-2.5	0.1	0.9	0.9	0.281946

0.001314	4.4	CS11-19_71	1325	9.5	2.7	-1.5	0.8	1.1	0.281902
0.000493	3.1	CS11-19_74	1459	9.6	-1.9	3.4	1.0	1.3	0.281954
0.000684	3.9	CS11-19_76	1384	10.2	1.2	5.5	1.4	1.7	0.282061
0.001238	3.0	CS11-20_46	1374	27.4	8.7	1.1	1.0	2.1	0.281943
0.001237	3.0	CS11-20_46	1374	27.4	8.7	2.9	0.5	1.6	0.281995
0.001238	3.0	CS11-20_46	1374	27.4	8.7	0.6	0.9	2.0	0.281928
0.001238	3.0	CS11-20_46	1374	27.4	8.7	1.5	0.9	2.0	0.281956
0.001242	3.0	CS11-20_46	1374	27.4	8.7	1.8	0.9	2.0	0.281964
0.001247	3.0	CS11-20_46	1374	27.4	8.7	1.2	1.0	2.1	0.281947
0.001244	3.0	CS11-20_46	1374	27.4	8.7	1.0	0.7	1.8	0.281941
0.001284	3.0	CS11-20_46	1374	27.4	8.7	1.5	1.1	2.2	0.281954
0.001243	3.0	CS11-20_46	1374	27.4	8.7	1.6	1.2	2.2	0.281957
0.000578	3.0	CS11-20_3	1134	26.4	3.0	2.4	0.5	1.4	0.282133
0.001149	4.2	CS11-20_4	1975	17.6	2.5	5.3	0.8	1.9	0.281674
0.000414	3.6	CS11-20_7	1664	20.6	2.8	0.7	0.7	1.6	0.281746
0.001029	4.1	CS11-20_8	1683	18.7	3.4	1.7	0.7	1.6	0.281762
0.001150	3.3	CS11-20_9	1620	20.0	-4.3	2.3	0.7	1.6	0.281819
0.000643	4.0	CS11-20_12	1712	16.9	-0.5	0.3	0.6	1.4	0.281703
0.000781	3.7	CS11-20_13	2715	15.9	2.4	-0.1	0.5	1.9	0.281036
0.000534	7.5	CS11-20_15	1333	23.8	1.1	2.7	0.7	1.6	0.282016
0.002876	3.5	CS11-20_16	1672	19.3	0.3	1.4	1.0	2.0	0.281760
0.000652	5.0	CS11-20_17	1790	25.1	3.8	5.1	0.7	2.0	0.281787
0.000727	3.1	CS11-20_18	1759	18.4	-0.5	2.6	0.9	1.8	0.281739
0.000358	4.3	CS11-20_25	1136	57.5	-0.1	2.6	0.9	3.1	0.282139
0.001178	3.6	CS11-20_27	1255	21.3	4.9	3.1	0.6	1.4	0.282076
0.000300	3.2	CS11-20_28	2724	23.0	2.4	-1.3	0.6	2.3	0.280996
0.000556	3.3	CS11-20_29	1036	34.0	-2.2	0.8	0.8	1.9	0.282153
0.000511	3.2	CS11-20_31	2393	18.1	2.0	-12.7	1.0	2.2	0.280893
0.000518	6.3	CS11-20_33	1790	17.0	3.5	-0.9	0.8	1.7	0.281620
0.000430	3.0	CS11-20_34	1100	27.4	4.9	3.1	1.1	2.0	0.282177
0.000660	3.6	CS11-20_37	1793	16.6	0.7	2.5	0.6	1.5	0.281713
0.001393	3.0	CS11-20_39	1656	17.9	2.0	0.2	0.6	1.4	0.281738
0.000999	3.9	CS11-20_41	1695	12.2	0.2	0.3	0.6	1.2	0.281713
0.000431	3.8	CS11-20_42	1724	16.1	-1.9	3.3	0.5	1.2	0.281781
0.000551	3.4	CS11-20_43	1747	17.8	1.1	4.1	0.6	1.5	0.281787
0.000860	4.0	CS11-20_47	1118	26.3	2.5	5.4	0.8	1.7	0.282230
0.000769	5.1	CS11-20_49	1614	29.7	0.3	-0.5	1.1	2.5	0.281744
0.000441	3.0	CS11-20_51	1437	17.1	0.7	-9.7	1.0	1.6	0.281600
0.001941	6.4	CS11-20_52	1666	17.3	1.0	1.4	0.8	1.8	0.281765
0.000285	14.6	CS11-20_55	1505	14.4	1.9	2.4	0.6	1.2	0.281895
0.000413	5.6	CS11-20_56	1610	12.2	-2.1	3.5	0.6	1.1	0.281861
0.002332	5.5	CS11-20_57	1527	16.5	2.7	4.9	1.2	2.0	0.281953
0.000420	3.0	CS11-20_60	1803	17.7	0.2	1.5	0.9	1.8	0.281677
0.000694	3.1	CS11-20_63	1357	19.2	-0.5	-8.0	0.7	1.4	0.281698
0.000821	4.1	CS11-20_64	1643	12.3	-0.5	9.2	0.8	1.4	0.281998
0.003426	6.9	CS11-20_66	1756	13.4	0.2	2.3	0.7	1.9	0.281732
0.000763	5.1	CS11-20_72	1632	15.2	-2.0	-3.6	0.5	1.2	0.281646
0.001014	4.8	CS11-20_74	1702	19.1	-3.7	4.8	0.9	1.8	0.281837
0.000615	3.0	CS11-20_75	1807	18.7	2.2	6.7	0.7	1.6	0.281821
0.002041	5.3	CS11-5_3	1466	9.5	0.5	3.6	1.0	1.4	0.281956
0.000995	5.2	CS11-5_4	1827	9.1	-1.3	2.2	1.1	1.7	0.281683
0.000725	5.1	CS11-5_5	1948	8.9	3.6	-0.9	0.9	1.5	0.281517
0.001591	6.7	CS11-5_6	1497	9.5	-3.4	6.0	1.0	1.5	0.282003
0.000224	11.4	CS11-5_8	1151	11.4	1.1	-24.4	0.9	1.1	0.281368
0.000702	6.3	CS11-5_11	3026	8.0	3.8	2.5	1.9	3.2	0.280906
0.000780	5.2	CS11-5_12	1726	9.2	-2.0	2.0	1.1	1.6	0.281743

0.000580	7.3	CS11-5_14	2811	8.2	1.1	2.1	1.0	2.2	0.281034
0.000813	5.2	CS11-5_15	1201	9.9	2.1	5.2	1.2	1.4	0.282172
0.000585	5.5	CS11-5_16	1751	9.2	-0.8	-1.7	1.1	1.6	0.281621
0.002691	5.3	CS11-5_17	1491	9.5	-1.1	4.1	1.2	1.7	0.281953
0.000500	6.6	CS11-5_21	1607	9.3	-2.2	-6.1	1.1	1.5	0.281592
0.000745	5.4	CS11-5_22	1519	15.8	0.4	3.1	1.2	1.9	0.281908
0.000819	5.6	CS11-5_24	1786	9.1	-1.3	2.7	1.1	1.7	0.281723
0.000778	5.5	CS11-5_26	1153	59.2	-0.2	3.1	1.1	3.5	0.282141
0.000675	8.2	CS11-5_29	1512	9.7	-0.8	4.9	1.2	1.6	0.281963
0.001507	5.7	CS11-5_33	1965	8.9	0.0	-0.8	1.1	1.9	0.281507
0.000730	5.2	CS11-5_34	1584	32.8	2.3	-2.0	1.0	2.4	0.281720
0.000536	5.8	CS11-5_35	1449	21.1	1.2	1.4	1.1	1.9	0.281905
0.000742	7.2	CS11-5_36	1486	9.8	1.2	2.9	1.1	1.5	0.281923
0.000903	5.2	CS11-5_37	1322	9.7	-1.7	-1.3	0.9	1.1	0.281908
0.000794	7.9	CS11-5_39	1271	17.3	-0.4	2.2	1.1	1.7	0.282041
0.001023	5.8	CS11-5_40	1800	9.1	-2.1	1.0	1.4	2.0	0.281666
0.001732	6.3	CS11-5_41	1756	9.1	1.7	-0.7	0.9	1.6	0.281646
0.000444	6.5	CS11-5_42	1055	34.6	2.8	-8.3	0.8	2.0	0.281883
0.001068	5.1	CS11-5_43	1732	9.2	-0.7	2.1	1.0	1.5	0.281741
0.001121	5.3	CS11-5_45	1825	9.1	3.6	-2.3	1.2	1.8	0.281558
0.001084	5.3	CS11-5_46	1552	14.4	1.3	3.3	1.0	1.6	0.281890
0.000639	5.1	CS11-5_47	1990	8.9	0.7	-1.3	1.3	2.0	0.281478
0.001120	5.2	CS11-5_50	1801	3.7	1.2	-2.7	0.9	1.3	0.281560
0.000730	5.2	CS11-5_52	2716	2.3	0.2	-0.8	0.9	1.7	0.281018
0.001328	5.6	CS11-5_8	1151	11.4	1.1	-0.9	0.9	1.2	0.282031
0.001009	1.7	CS11-5_26	1153	59.2	-0.2	3.4	0.9	3.1	0.282152
0.001602	5.2	CS11-6_1	1435	9.5	-3.3	-2.7	1.1	1.5	0.281798
0.000618	5.5	CS11-6_3	1815	9.1	0.0	0.3	1.1	1.6	0.281636
0.000774	8.8	CS11-6_4	1502	12.2	-1.9	5.8	1.1	1.7	0.281995
0.001679	5.1	CS11-6_5	1387	9.6	4.4	7.1	1.0	1.4	0.282105
0.000049	7.7	CS11-6_7	1743	9.2	-1.0	2.2	1.0	1.4	0.281736
0.000186	6.9	CS11-6_8	2557	8.4	1.6	3.0	1.0	1.9	0.281228
0.001775	7.7	CS11-6_9	1305	9.7	1.8	5.8	0.9	1.3	0.282121
0.000576	5.1	CS11-6_10	1155	12.4	-4.5	-3.1	0.9	1.2	0.281966
0.000821	5.3	CS11-6_12	1724	12.3	1.7	3.7	1.4	2.0	0.281790
0.000644	5.2	CS11-6_13	1384	31.3	-1.1	-6.8	0.9	2.1	0.281715
0.000928	10.5	CS11-6_14	1283	13.4	0.0	2.3	1.0	1.5	0.282036
0.000608	5.2	CS11-6_16	1426	9.5	-2.4	-9.5	1.1	1.4	0.281612
0.000714	5.1	CS11-6_15	1143	15.0	-2.1	4.9	1.2	1.6	0.282199
0.002817	8.9	CS11-6_17	1298	11.1	4.5	5.0	1.0	1.7	0.282102
0.000446	5.1	CS11-6_20	2563	8.4	-1.1	2.6	1.0	2.0	0.281213
0.000480	5.2	CS11-6_22	1558	9.4	-1.0	1.0	1.0	1.4	0.281822
0.000420	5.5	CS11-6_24	1537	10.0	1.5	-0.8	1.1	1.5	0.281786
0.001127	5.6	CS11-6_25	1538	9.4	0.6	3.5	1.1	1.5	0.281905
0.001462	5.2	CS11-6_27	1770	9.1	3.8	4.2	1.0	1.6	0.281776
0.000823	5.3	CS11-6_28	1617	19.2	0.8	5.1	1.1	2.0	0.281899
0.000693	5.2	CS11-6_29	1395	11.8	-1.0	5.4	1.1	1.5	0.282050
0.000987	5.1	CS11-6_30	1653	9.3	-1.2	-0.2	0.9	1.4	0.281727
0.000528	8.2	CS11-6_31	1044	16.5	-1.8	-1.7	0.9	1.3	0.282078
0.000910	5.2	CS11-6_32	1710	9.2	0.6	1.2	0.9	1.4	0.281730
0.000725	5.3	CS11-6_34	1327	10.3	-1.1	-17.6	0.8	1.1	0.281448
0.000713	5.1	CS11-6_35	1441	9.5	-0.4	-6.5	0.9	1.2	0.281687
0.000557	5.2	CS11-6_37	1217	14.6	0.8	4.7	1.1	1.5	0.282146
0.000808	5.9	CS11-6_38	1849	9.0	2.5	1.6	0.9	1.5	0.281650
0.001089	5.1	CS11-6_39	1351	11.7	-0.1	6.2	1.0	1.4	0.282103
0.000772	5.1	CS11-6_40	1264	9.8	-1.1	2.4	1.0	1.2	0.282053
0.000988	7.7	CS11-6_41	1523	9.4	-0.3	6.9	1.1	1.6	0.282012

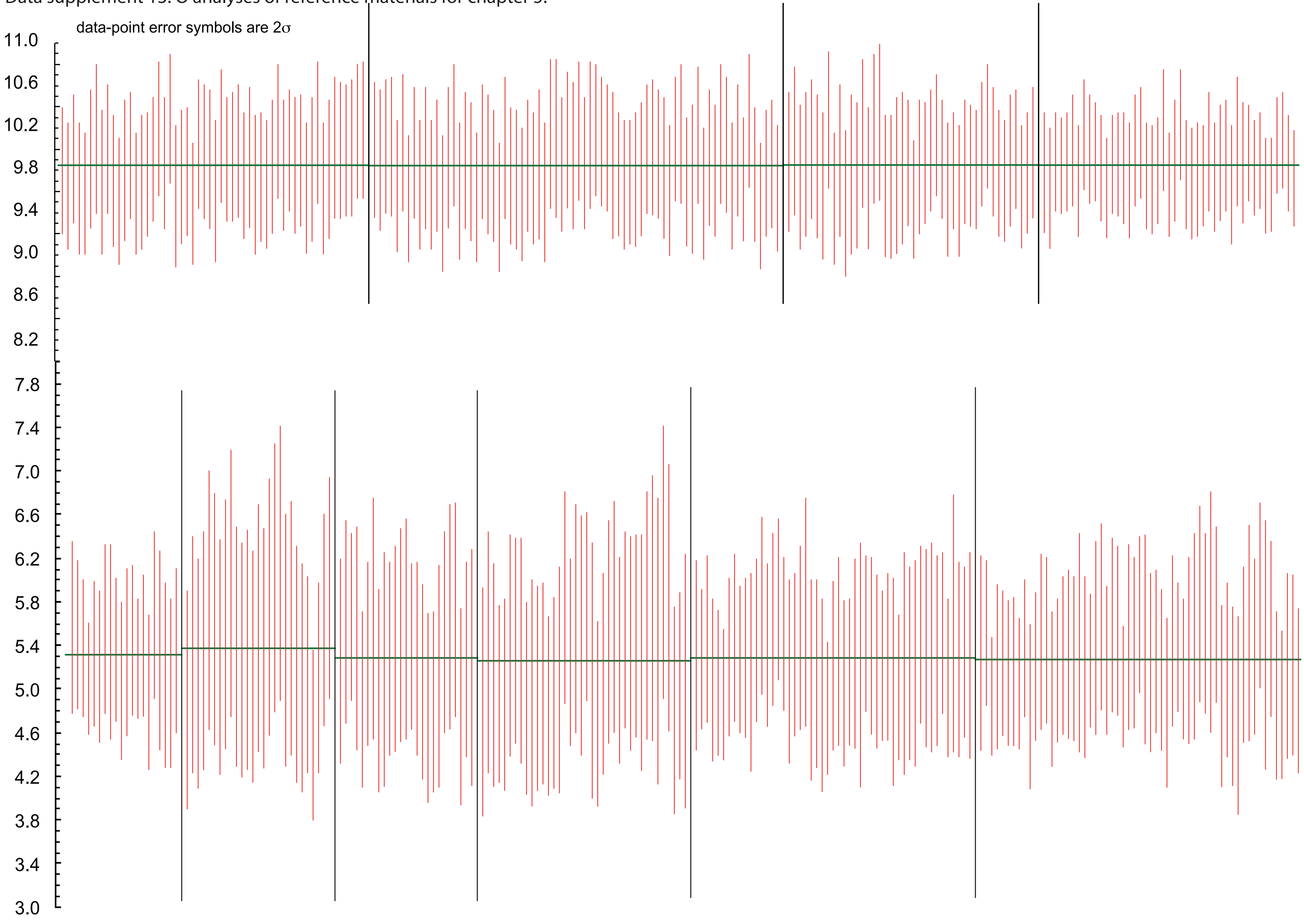
0.000584	5.3	CS11-6_42	1768	9.1	0.5	-0.1	1.0	1.5	0.281656
0.000866	5.2	CS11-6_45	1250	17.9	2.9	4.0	1.0	1.6	0.282105
0.000526	5.1	CS11-6_46	1978	10.5	-0.9	1.5	0.9	1.6	0.281565
0.000551	5.4	CS11-6_47	1239	11.0	-0.7	3.9	1.0	1.3	0.282111
0.000811	5.2	CS11-6_48	2944	8.1	-0.2	-1.3	1.1	2.3	0.280853
0.002737	5.1	CS11-6_50	1235	9.8	-1.4	4.6	1.2	1.5	0.282131
0.000625	5.2	CS11-6_51	1518	10.7	-1.9	6.3	1.0	1.4	0.281999
0.000544	2.1	CS11-6_16	1426	9.5	-2.4	-6.3	0.8	1.1	0.281701
0.001223	1.9	CS11-6_34	1327	10.3	-1.1	-17.3	1.1	1.4	0.281455
0.000481	1.5	CS11-6_34	1327	10.3	-1.1	-17.3	0.8	1.1	0.281457
0.000793	3.6	CS11-1_1	1079	8.3	-2.4	2.0	1.3	1.3	0.282159
0.000525	5.2	CS11-1_5	1006	27.3	-3.1	-2.3	0.9	1.8	0.282083
0.001279	3.1	CS11-1_6	1072	14.5	-1.5	0.2	1.0	1.3	0.282112
0.001047	3.0	CS11-1_8	1487	13.1	-1.5	1.7	0.9	1.4	0.281888
0.001398	9.9	CS11-1_9	1016	8.8	4.6	-2.2	0.9	1.1	0.282079
0.001153	4.9	CS11-1_10	1503	9.3	-1.0	3.8	1.0	1.4	0.281937
0.000502	3.5	CS11-1_11	994	15.2	2.2	-2.5	1.1	1.4	0.282087
0.000993	3.3	CS11-1_12	1494	6.6	-1.6	2.4	0.9	1.1	0.281903
0.000626	3.1	CS11-1_13	1015	23.6	-2.1	-0.7	1.2	1.9	0.282124
0.000888	7.1	CS11-1_14	1083	9.2	-1.1	1.1	0.9	1.0	0.282130
0.000456	3.2	CS11-1_15	1003	21.3	-1.7	-3.0	0.8	1.4	0.282066
0.002822	3.4	CS11-1_16	1651	10.6	3.7	7.1	1.0	1.6	0.281935
0.000685	3.3	CS11-1_17	1525	9.1	1.5	3.7	1.4	1.8	0.281919
0.000505	3.4	CS11-1_18	1061	17.2	5.6	-0.4	0.9	1.3	0.282101
0.002098	3.0	CS11-1_19	1490	6.7	-1.9	2.8	1.1	1.3	0.281917
0.000639	3.3	CS11-1_21	1070	27.2	0.3	-0.1	1.0	1.9	0.282105
0.001176	3.6	CS11-1_22	1494	7.4	-1.1	3.3	1.0	1.3	0.281929
0.000787	4.3	CS11-1_23	923	32.8	-5.0	-5.6	1.1	2.2	0.282044
0.000764	3.2	CS11-1_24	1495	9.9	-3.5	3.8	0.9	1.3	0.281942
0.000552	3.2	CS11-1_25	1082	19.5	3.2	0.5	1.1	1.6	0.282114
0.000718	4.8	CS11-1_26	1036	15.9	-2.2	0.0	0.7	1.1	0.282130
0.000411	3.4	CS11-1_27	994	10.3	2.1	-2.8	0.9	1.0	0.282076
0.000936	9.1	CS11-1_28	1241	6.7	-0.5	5.6	1.2	1.4	0.282156
0.000392	3.1	CS11-1_29	991	31.4	3.0	-1.9	1.3	2.3	0.282104
0.000440	3.3	CS11-1_30	955	15.6	-0.1	-3.7	1.0	1.2	0.282076
0.000660	4.7	CS11-1_31	1019	47.3	4.6	-3.8	1.2	2.9	0.282034
0.000388	3.0	CS11-1_32	1053	7.6	4.3	-0.5	0.6	0.6	0.282105
0.001535	3.1	CS11-1_33	1501	9.7	0.8	3.2	0.8	1.2	0.281923
0.001289	4.8	CS11-1_34	1263	5.9	0.8	6.6	1.0	1.1	0.282170
0.000760	3.0	CS11-1_37	1503	12.8	2.4	3.1	1.3	1.8	0.281919
0.000845	3.0	CS11-1_38	1502	7.7	2.4	3.0	0.9	1.2	0.281914
0.000536	3.0	CS11-1_39	991	10.1	1.8	-3.5	0.7	0.8	0.282058
0.000622	7.3	CS11-1_42	971	21.2	0.1	-5.3	1.0	1.6	0.282022
0.000536	3.0	CS11-1_44	956	15.0	-5.0	-6.2	1.0	1.2	0.282006
0.000625	8.1	CS11-1_46	986	15.6	-3.8	-6.4	0.9	1.3	0.281980
0.000751	12.0	CS11-1_47	1098	34.5	-2.4	2.4	1.2	2.5	0.282158
0.000694	3.2	CS11-1_48	1485	6.7	-2.8	3.1	0.7	0.9	0.281928
0.000469	4.5	CS11-1_51	919	28.8	-4.2	-5.3	1.2	2.0	0.282055
0.000728	3.1	CS11-1_52	1500	7.1	1.5	2.6	1.1	1.4	0.281906
0.000564	3.3	CS11-1_54	1053	19.3	0.3	3.8	0.9	1.4	0.282225
0.001274	6.0	CS11-1_55	1485	9.8	-1.5	4.1	1.0	1.5	0.281958
0.000661	3.7	CS11-1_56	1078	7.1	-2.4	-0.5	1.0	1.0	0.282088
0.000807	14.4	CS11-1_57	988	39.9	0.0	-4.1	1.0	2.5	0.282046
0.001744	3.4	CS11-1_58	1071	11.3	-1.3	5.1	1.3	1.5	0.282250
0.001510	4.0	CS11-1_60	1069	9.3	-3.1	0.9	0.9	1.1	0.282133
0.000665	5.1	CS11-1_62	1221	22.4	0.1	5.2	1.1	1.8	0.282157
0.000673	3.8	CS11-1_63	1063	10.0	-2.9	-0.4	1.0	1.1	0.282101

0.000686	3.3	CS11-3_1	985	18.5	3.2	-1.9	1.0	1.4	0.282108
0.000781	4.8	CS11-3_3	1498	10.1	-1.0	3.6	0.9	1.3	0.281935
0.000548	3.2	CS11-3_4	1245	11.0	0.9	3.0	0.7	1.0	0.282080
0.000903	3.3	CS11-3_5	983	26.3	0.2	-3.7	0.7	1.5	0.282058
0.000992	3.1	CS11-3_6	955	20.5	-0.3	-3.1	0.8	1.3	0.282094
0.000540	3.0	CS11-3_7	1077	12.0	-0.2	3.1	1.0	1.2	0.282191
0.001015	3.8	CS11-3_8	1506	7.5	0.5	3.6	1.2	1.5	0.281930
0.000960	3.8	CS11-3_9	1121	11.0	5.0	4.3	0.9	1.1	0.282197
0.000798	3.0	CS11-3_10	858	37.2	-10.4	-4.7	1.5	2.7	0.282110
0.000832	14.8	CS11-3_11	1105	16.2	4.4	0.2	0.9	1.4	0.282090
0.001446	9.0	CS11-3_16	1091	10.3	1.6	4.9	1.0	1.3	0.282232
0.001044	3.2	CS11-3_17	1639	12.0	2.9	4.9	1.0	1.5	0.281880
0.000985	3.0	CS11-3_18	960	19.6	1.5	-3.5	1.3	1.8	0.282079
0.001819	3.3	CS11-3_19	1661	9.5	2.6	7.7	1.6	2.1	0.281944
0.000860	7.0	CS11-3_20	1238	9.1	-2.1	6.2	1.6	1.8	0.282176
0.000436	3.1	CS11-3_21	958	23.0	-0.7	-3.5	0.8	1.4	0.282082
0.000986	3.1	CS11-3_22	988	37.1	2.6	-0.2	1.2	2.5	0.282154
0.002219	3.7	CS11-3_24	1669	6.0	1.8	6.9	1.2	1.7	0.281916
0.001690	3.2	CS11-3_25	1659	8.5	-0.2	5.4	1.2	1.7	0.281881
0.000628	7.1	CS11-3_26	996	13.6	2.1	-2.8	1.0	1.2	0.282076
0.000567	3.2	CS11-3_27	1118	11.3	3.8	5.9	1.1	1.3	0.282244
0.001615	3.7	CS11-3_29	1671	7.5	-0.4	7.4	1.1	1.6	0.281930
0.002342	3.0	CS11-3_.30	1526	7.3	1.8	6.2	1.0	1.4	0.281990
0.000797	8.8	CS11-3_31	1657	6.2	1.5	4.9	0.7	1.1	0.281868
0.000535	4.1	CS11-3_32	984	21.6	2.1	-2.7	1.0	1.5	0.282086
0.001046	3.8	CS11-3_33	1109	11.8	4.6	6.7	1.0	1.2	0.282272
0.000900	4.7	CS11-3_34	977	10.4	1.0	-1.8	1.0	1.1	0.282117
0.000402	4.1	CS11-3_35	1650	18.3	0.3	5.1	1.1	2.0	0.281878
0.002945	10.2	CS11-3_36	1145	11.8	3.2	7.2	1.1	1.7	0.282264
0.001769	3.1	CS11-3_37	1653	5.6	-1.7	5.5	0.9	1.2	0.281888
0.000899	3.2	CS11-3_39	1512	6.1	-2.4	3.3	0.6	0.8	0.281916
0.000519	7.4	CS11-3_40	936	24.5	-2.7	-2.6	0.6	1.3	0.282120
0.000435	3.4	CS11-3_41	946	15.7	1.2	-3.1	1.0	1.3	0.282100
0.000316	3.1	CS11-3_42	1010	12.7	4.0	-2.8	1.1	1.3	0.282065
0.000705	3.2	CS11-3_43	918	35.8	-1.6	-3.0	0.9	2.1	0.282119
0.000802	3.0	CS11-3_44	1121	12.4	2.9	7.0	0.7	1.0	0.282274
0.002133	5.3	CS11-3_45	1067	13.6	0.0	5.5	1.0	1.3	0.282265
0.000618	12.1	CS11-3_46	1073	18.1	2.0	-1.2	1.0	1.5	0.282073
0.001066	3.0	CS11-3_47	1095	26.8	-1.1	4.1	1.1	2.0	0.282207
0.000732	5.5	CS11-3_48	1046	41.1	0.1	0.2	0.9	2.4	0.282129
0.001113	12.1	CS11-3_49	1119	6.7	3.5	3.4	1.0	1.2	0.282172
0.000437	5.7	CS11-3_51	1114	9.5	1.8	7.1	0.6	0.7	0.282278
0.000337	3.6	CS11-3_52	1645	10.3	1.1	5.5	0.9	1.3	0.281894
0.000692	4.0	CS11-3_53	1656	15.6	1.2	5.5	1.1	1.8	0.281887
0.000403	3.4	CS11-3_55	1088	9.2	-0.9	-5.4	0.8	0.9	0.281943
0.000789	14.4	CS11-3_56	1258	15.0	0.6	3.9	1.0	1.6	0.282097
0.002277	10.7	CS11-3_57	1071	20.9	-1.5	2.7	1.2	2.1	0.282183
0.000408	3.6	CS11-3_58	1107	9.3	-1.6	1.4	1.0	1.1	0.282122
0.001142	3.8	CS11-3_72	929	29.8	-1.5	-3.0	1.1	2.0	0.282112
0.001144	7.6	CS11-13_1	1592	9.5	4.7	0.0	1.0	1.5	0.281773
0.000812	1.5	CS11-13_2	1050	8.8	4.5	-6.0	0.8	0.9	0.281951
0.000019	1.4	CS11-13_6	1048	12.5	0.8	-2.4	1.1	1.3	0.282053
0.000770	2.1	CS11-13_9	1074	14.4	-1.4	2.3	0.9	1.2	0.282170
0.000916	2.4	CS11-13_10	1164	16.5	1.8	4.1	0.9	1.3	0.282162
0.001258	4.5	CS11-13_11	1598	15.1	1.8	-2.8	1.1	1.8	0.281689
0.000679	1.9	CS11-13_12	1514	21.0	0.4	6.3	1.3	2.1	0.282001

0.001208	1.7	CS11-13_14	1651	5.0	-0.5	2.8	1.0	1.3	0.281815
0.000419	3.1	CS11-13_15	1009	70.2	1.0	-1.9	1.0	3.8	0.282093
0.001040	2.2	CS11-13_16	1060	19.2	4.4	-10.7	1.1	1.6	0.281813
0.001535	1.5	CS11-13_19	1655	3.5	2.3	2.7	1.2	1.4	0.281808
0.000187	1.4	CS11-13_26	1002	12.2	2.4	-6.4	1.0	1.2	0.281970
0.001058	1.8	CS11-13_28	1653	4.5	3.6	0.9	1.4	1.6	0.281758
0.000544	1.9	CS11-13_29	1454	8.9	0.5	3.3	0.9	1.2	0.281955
0.001107	2.0	CS11-13_30	1103	37.2	-0.4	2.8	0.9	2.2	0.282166
0.000675	3.9	CS11-13_31	1345	10.0	3.5	0.6	0.9	1.2	0.281948
0.000371	2.3	CS11-13_32	1737	5.3	0.6	-2.0	1.1	1.3	0.281623
0.000830	1.5	CS11-13_33	1404	30.5	1.5	-1.9	1.3	2.4	0.281839
0.000525	1.7	CS11-13_35	1102	13.8	1.1	3.4	1.1	1.4	0.282183
0.000567	1.6	CS11-13_36	1205	37.7	1.6	3.8	1.0	2.4	0.282130
0.001155	1.7	CS11-13_37	974	85.5	0.0	-2.5	1.0	4.3	0.282100
0.000664	15.0	CS11-13_38	1658	18.9	2.6	0.8	0.9	2.0	0.281752
0.000643	4.4	CS11-13_39	1620	9.8	2.3	0.3	1.3	1.8	0.281763
0.001489	8.2	CS11-13_41	1249	8.9	1.2	2.1	1.0	1.3	0.282054
0.000412	1.5	CS11-13_42	976	24.6	0.9	-5.1	0.9	1.6	0.282024
0.000856	2.1	CS11-13_43	1335	33.1	1.7	0.8	1.1	2.3	0.281960
0.000766	1.4	CS11-13_44	1481	7.5	-0.8	1.2	1.0	1.3	0.281879
0.002873	3.0	CS11-13_45	1649	6.0	0.2	1.7	1.2	1.6	0.281783
0.001961	2.3	CS11-13_46	1653	6.3	0.6	-3.8	1.0	1.4	0.281626
0.000679	2.3	CS11-13_47	1622	15.1	-3.1	-1.9	1.0	1.6	0.281698
0.000772	1.4	CS11-13_49	1316	13.8	2.6	-0.3	0.8	1.2	0.281942
0.000839	1.9	CS11-13_51	1645	34.8	4.1	3.0	1.1	2.7	0.281823
0.000323	3.3	CS11-13_54	1304	24.9	4.3	0.4	0.8	1.7	0.281968
0.001074	5.8	CS11-13_55	1048	20.2	3.2	2.7	1.0	1.6	0.282197
0.000235	1.5	CS11-13_56	1536	17.8	0.4	9.0	1.1	1.8	0.282061
0.001678	1.8	CS11-13_57	1114	13.6	1.2	8.8	1.3	1.6	0.282329
0.000946	3.5	CS11-13_59	1688	17.0	1.5	1.5	0.9	1.7	0.281752
0.000632	2.0	CS11-13_62	1660	10.1	-0.7	-0.2	1.2	1.7	0.281722
0.000931	1.6	CS11-13_67	1657	4.4	3.7	-0.5	1.1	1.3	0.281716
0.000729	1.5	CS11-13_69	1048	23.0	1.5	-3.7	1.0	1.6	0.282016
0.000192	1.5	CS11-13_71	1074	13.5	3.2	2.5	1.0	1.2	0.282177
0.000659	1.7	CS11-13_72	1764	7.4	1.4	-3.4	1.2	1.5	0.281566
0.000378	2.3	CS11-13_73	2667	2.5	4.9	1.2	1.1	1.7	0.281104
0.000218	2.3	CS11-13_74	1077	15.1	1.5	-3.3	1.1	1.5	0.282010
0.001097	1.9	CS11-13_75	1661	6.9	2.7	2.8	1.2	1.5	0.281808
0.000808	2.4	CS11-13_77	1350	17.4	-0.9	7.1	1.2	1.8	0.282128
0.000771	1.6	CS11-13_78	1618	19.8	3.7	0.6	1.1	1.9	0.281772
0.000660	1.5	CS11-13_79	1058	37.2	1.3	1.7	0.9	2.2	0.282162
0.000616	1.6	CS11-13_80	1432	10.7	4.1	5.6	0.9	1.2	0.282033
0.000503	1.6	CS11-13_82	1664	9.8	4.7	-0.3	1.0	1.4	0.281718
0.000725	3.2	CS11-13_83	1342	16.7	3.9	3.2	1.1	1.7	0.282025
0.000421	11.0	CS11-13_84	1024	9.6	3.3	-11.6	0.8	0.9	0.281809
0.000857	2.0	CS11-13_85	1332	32.4	2.5	6.4	1.2	2.5	0.282122
0.000948	1.5	CS11-13_14	1651	5.0	-0.5	2.3	0.9	1.1	0.281799
0.000373	2.8	CS11-9_1	1061	68.7	-1.9	3.8	0.7	3.4	0.282221
0.000688	3.3	CS11-9_2	1050	28.6	-1.9	0.7	0.7	1.7	0.282142
0.000637	3.2	CS11-9_3	1100	9.5	-3.0	1.0	0.7	0.9	0.282116
0.000611	3.1	CS11-9_4	1043	22.8	-1.6	1.7	0.8	1.5	0.282172
0.000434	2.9	CS11-9_6	1063	59.8	-0.8	1.3	0.9	3.2	0.282149
0.000395	3.0	CS11-9_8	1053	20.0	-1.1	1.7	0.8	1.3	0.282166
0.000572	3.0	CS11-9_9	1180	71.2	1.4	4.5	0.9	3.8	0.282163
0.000626	3.9	CS11-9_10	1052	44.4	-2.5	1.7	0.8	2.4	0.282169
0.000786	2.7	CS11-9_12	1042	65.0	-3.5	0.8	0.8	3.3	0.282147
0.000705	5.6	CS11-9_13	1045	26.1	-2.6	2.7	0.9	1.8	0.282199

0.000618	4.8	CS11-9_15	1067	51.8	-0.5	0.5	0.8	2.8	0.282124
0.001186	2.7	CS11-9_16	1079	19.6	-1.5	5.2	0.7	1.3	0.282250
0.000510	5.8	CS11-9_17	1072	69.9	-0.9	2.5	0.8	3.6	0.282178
0.000518	2.8	CS11-9_18	1061	47.4	-1.8	0.7	1.0	2.7	0.282134
0.000733	3.2	CS11-9_19	1093	45.0	-0.5	3.3	0.7	2.4	0.282188
0.001432	2.7	CS11-9_20	1128	13.5	-2.0	7.6	1.0	1.3	0.282284
0.000614	3.2	CS11-9_21	1050	53.2	-4.1	1.1	0.8	2.8	0.282152
0.000662	3.1	CS11-9_22	1066	45.1	-1.6	3.1	1.2	2.9	0.282197
0.000446	4.5	CS11-9_23	1070	80.6	-2.4	3.0	0.8	4.0	0.282194
0.001023	2.7	CS11-9_24	1071	18.4	-2.1	1.3	0.9	1.4	0.282145
0.000372	4.4	CS11-9_25	1052	53.3	-3.7	0.0	0.7	2.7	0.282119
0.000595	2.7	CS11-9_27	1067	29.8	-4.0	0.7	0.7	1.7	0.282129
0.000522	6.7	CS11-9_29	1068	25.8	-3.6	2.4	0.9	1.7	0.282176
0.000539	3.2	CS11-9_31	1057	53.2	-3.3	2.7	1.0	3.0	0.282192
0.000463	2.7	CS11-9_32	1067	52.5	-2.8	1.3	1.0	3.0	0.282147
0.000681	2.7	CS11-9_34	1095	36.1	3.8	0.8	1.0	2.3	0.282114
0.000495	8.4	CS11-9_35	1044	69.9	-0.8	1.0	0.7	3.5	0.282153
0.000236	3.1	CS11-9_36	1104	77.1	1.7	2.3	0.7	3.8	0.282150
0.000317	2.8	CS11-9_37	1079	44.6	1.3	2.2	0.8	2.5	0.282165
0.000550	2.8	CS11-9_38	1079	40.9	-0.3	1.7	0.8	2.3	0.282149
0.000496	3.1	CS11-9_39	1098	45.6	2.2	2.4	0.9	2.6	0.282157
0.000729	2.8	CS11-9_40	1067	18.2	-1.1	-0.3	0.6	1.0	0.282102
0.000612	2.8	CS11-9_41	1073	19.2	1.0	0.7	0.9	1.4	0.282125
0.000527	2.9	CS11-9_44	1058	28.2	-0.3	0.2	0.8	1.7	0.282122
0.000700	7.6	CS11-9_45	1061	12.3	2.2	0.1	0.6	0.9	0.282118
0.000431	2.7	CS11-9_46	1025	81.6	4.2	-0.5	0.9	4.2	0.282122
0.000510	3.4	CS11-9_47	1100	16.9	4.2	1.1	0.9	1.4	0.282120
0.000594	2.7	CS11-9_50	1093	24.3	2.7	3.5	0.7	1.5	0.282190
0.000622	7.0	CS11-9_51	1081	19.4	0.3	3.3	0.9	1.5	0.282194
0.000352	2.8	CS11-9_52	1158	76.1	4.0	6.1	0.9	3.9	0.282225
0.000369	2.8	CS11-9_53	1192	63.6	1.3	6.8	0.8	3.3	0.282221
0.000855	4.1	CS11-9_58	1437	14.8	4.3	1.0	0.7	1.3	0.281902
0.001157	3.4	CS11-9_63	1230	17.1	0.3	6.2	0.8	1.3	0.282181
0.000673	3.5	CS11-9_69	1173	47.6	1.1	4.6	0.9	2.7	0.282171
0.000634	2.7	CS11-9_75	1501	11.6	1.8	3.1	0.7	1.1	0.281918
0.000715	4.3	CS11-9_85	1095	82.2	-0.8	2.2	1.0	4.3	0.282155
0.000809	2.8	CS11-9_100	1110	50.9	-1.3	3.5	0.8	2.7	0.282180
0.000385	2.7	CS11-9_105	1026	31.5	-0.2	0.0	0.8	1.8	0.282136
0.000373	2.7	CS11-9_110	1049	85.8	4.8	-2.1	0.6	4.1	0.282062
0.002890	3.1	CS11-9_112	1172	11.0	2.3	8.3	0.9	1.2	0.282278

Data supplement 13: O analyses of reference materials for chapter 5.



Data supplement 14: Detrital zircon O data for chapter 5.

Spot	∂18O	±1s	Age	2s
Siam1_1	5.6	0.3	1988.6	12.3
Siam1_4	5.2	0.2	2153.0	10.7
Siam1_5	5.8	0.3	1909.1	34.6
Siam1_6	6.9	0.3	1926.1	5.6
Siam1_7	9.5	0.2	1876.8	4.3
Siam1_8	5.5	0.2	2154.8	12.0
Siam1_9	5.5	0.2	2137.6	20.9
Siam1_10	9.7	0.2	1897.5	4.3
Siam1_11	8.2	0.3	1997.0	11.5
Siam1_13	8.2	0.3	2619.2	14.4
Siam1_18	5.4	0.3	2159.5	12.7
Siam1_20	5.3	0.2	2142.5	4.4
Siam1_14	7.0	0.3	1920.1	8.4
Siam1_22	5.5	0.2	2131.3	24.6
Siam1_23	7.9	0.2	1854.8	4.1
Siam1_24	5.9	0.2	2161.6	24.2
Siam1_25	5.5	0.2	2147.4	12.2
Siam1_26	7.5	0.2	1979.2	5.7
Siam1_29	6.0	0.2	1895.6	7.9
Siam1_30	4.2	0.3	2839.8	3.1
Siam1_31	6.4	0.3	1879.1	13.0
Siam1_32	7.3	0.2	2552.6	7.1
Siam1_33	5.8	0.3	2128.8	18.7
Siam1_34	5.9	0.2	2467.0	17.7
Siam1_35	5.6	0.2	1916.9	8.9
Siam1_36	5.6	0.2	2782.8	5.6
Siam1_37	5.4	0.2	2718.4	3.3
Siam1_38	7.9	0.2	1906.2	4.3
Siam1_39	7.0	0.2	2026.6	14.0
Siam1_40	6.1	0.2	2116.5	32.4
Siam1_41	6.4	0.2	1892.0	5.8
Siam1_42	9.9	0.2	1850.5	4.7
Siam1_44	7.2	0.2	2712.7	2.7
Siam1_45	5.3	0.2	2146.5	7.8
Siam1_46	5.4	0.2	2139.5	16.5
Siam1_47	8.8	0.3	2655.8	12.0
Siam1_48	5.5	0.2	2131.5	8.1
Siam1_49	7.8	0.3	1969.1	9.8
Siam1_50	6.4	0.2	1891.6	17.9
Siam1_51	6.6	0.3	2072.4	15.9
Siam1_52	5.4	0.3	2772.8	8.5
Siam1_53	2.0	0.3	2162.6	14.5
Siam1_54	6.1	0.2	1899.0	8.5
Siam1_55	4.9	0.2	2297.8	5.7
Siam1_56	5.8	0.2	2735.3	5.7
Siam1_57	5.8	0.3	2125.8	17.7
Siam1_59	5.9	0.3	2739.9	3.1
Siam1_72	5.1	0.3	2128.2	16.9
Siam1_73	7.1	0.3	1917.0	5.3
Siam1_74	5.2	0.3	1925.1	4.2
Siam1_75	5.0	0.3	3217.6	4.5
Siam1_76	5.2	0.3	1916.9	7.8
Siam1_77	6.1	0.3	1881.9	8.8
Siam1_78	5.4	0.3	2149.4	10.8
Siam1_79	5.0	0.3	2723.6	5.0
Siam1_80	5.4	0.3	2143.0	14.4
Siam1_86	5.2	0.3	2744.0	5.0
Siam1_88	5.4	0.3	2131.7	16.7
Siam1_89	5.2	0.3	2142.9	11.9
Siam1_90	5.5	0.3	2141.0	10.9
Siam1_91	5.1	0.3	2958.9	7.6
Siam1_92	5.1	0.3	2158.8	19.6
Siam1_93	6.6	0.3	1902.5	6.7

Spot	∂18O	±1s	Age	2s
CS11-6_1	5.5	0.2	1434.6	9.5
CS11-6_3	6.5	0.2	1815.0	9.1
CS11-6_4	5.6	0.2	1501.9	12.2
CS11-6_5	7.0	0.2	1387.3	9.6
CS11-6_7	10.6	0.2	1743.2	9.2
CS11-6_8	5.6	0.2	2557.5	8.4
CS11-6_9	5.4	0.2	1305.2	9.7
CS11-6_10	7.1	0.2	1155.2	12.4
CS11-6_12	11.1	0.2	1724.0	12.3
CS11-6_13	8.2	0.2	1384.3	31.3
CS11-6_14	5.9	0.2	1283.0	13.4
CS11-6_16	6.2	0.2	1425.7	9.5
CS11-6_15	7.0	0.2	1143.4	15.0
CS11-6_17	8.9	0.2	1297.5	11.1
CS11-6_20	6.2	0.2	2562.6	8.4
CS11-6_22	6.2	0.2	1557.5	9.4
CS11-6_24	6.7	0.2	1536.8	10.0
CS11-6_25	6.8	0.2	1538.0	9.4
CS11-6_27	7.1	0.2	1770.1	9.1
CS11-6_28	5.4	0.3	1617.4	19.2
CS11-6_29	5.9	0.2	1395.5	11.8
CS11-6_30	7.0	0.3	1652.8	9.3
CS11-6_31	10.1	0.2	1043.6	16.5
CS11-6_32	6.2	0.2	1709.8	9.2
CS11-6_34	5.8	0.2	1327.2	10.3
CS11-6_35	5.8	0.2	1441.0	9.5
CS11-6_37	5.8	0.3	1217.0	14.6
CS11-6_38	6.7	0.3	1849.1	9.0
CS11-6_39	6.1	0.3	1350.6	11.7
CS11-6_40	7.2	0.2	1263.8	9.8
CS11-6_41	5.7	0.2	1523.1	9.4
CS11-6_42	7.5	0.2	1768.1	9.1
CS11-6_45	6.2	0.2	1250.3	17.9
CS11-6_46	10.3	0.2	1977.8	10.5
CS11-6_47	7.7	0.3	1238.9	11.0
CS11-6_48	5.2	0.3	2943.6	8.1
CS11-6_50	5.8	0.2	1235.1	9.8
CS11-6_51	5.6	0.2	1518.4	10.7
CS11-5_3	9.3	0.3	1465.9	9.5
CS11-5_4	5.9	0.2	1826.7	9.1
CS11-5_5	10.1	0.3	1947.7	8.9
CS11-5_6	5.9	0.3	1497.2	9.5
CS11-5_8	10.9	0.2	1151.0	11.4
CS11-5_11	5.3	0.2	3025.6	8.0
CS11-5_12	7.9	0.2	1726.3	9.2
CS11-5_14	5.2	0.2	2811.2	8.2
CS11-5_15	6.0	0.3	1200.6	9.9
CS11-5_16	8.0	0.2	1751.5	9.2
CS11-5_17	5.0	0.2	1491.4	9.5
CS11-5_21	9.1	0.2	1606.9	9.3
CS11-5_22	7.3	0.3	1518.8	15.8
CS11-5_24	5.8	0.3	1786.4	9.1
CS11-5_26	6.2	0.3	1152.8	59.2
CS11-5_29	5.7	0.3	1512.4	9.7
CS11-5_33	10.0	0.3	1964.9	8.9
CS11-5_34	7.1	0.2	1584.0	32.8
CS11-5_35	6.6	0.3	1449.2	21.1
CS11-5_36	7.5	0.3	1485.8	9.8
CS11-5_37	5.2	0.3	1321.9	9.7
CS11-5_39	7.0	0.3	1271.0	17.3
CS11-5_40	5.3	0.2	1799.6	9.1
CS11-5_41	6.0	0.3	1756.1	9.1
CS11-5_42	8.1	0.2	1054.6	34.6

Spot	∂18O	±1s	Age	2s
CS11-1_1	5.8	0.8	1078.9	8.3
CS11-1_5	7.9	0.8	1006.5	27.3
CS11-1_6	6.1	0.6	1071.7	14.5
CS11-1_8	8.0	0.8	1487.3	13.1
CS11-1_9	5.6	0.5	1016.2	8.8
CS11-1_10	6.9	0.8	1503.3	9.3
CS11-1_11	6.6	0.7	993.8	15.2
CS11-1_12	7.3	0.8	1493.6	6.6
CS11-1_13	5.8	0.6	1015.5	23.6
CS11-1_14	6.2	0.6	1082.7	9.2
CS11-1_15	6.2	0.7	1002.7	21.3
CS11-1_16	6.0	0.6	1651.3	10.6
CS11-1_17	9.4	1.0	1524.6	9.1
CS11-1_18	7.8	1.0	1061.2	17.2
CS11-1_19	5.9	0.7	1489.7	6.7
CS11-1_21	6.8	0.7	1069.8	27.2
CS11-1_22	7.4	0.9	1494.0	7.4
CS11-1_23	6.5	0.6	923.3	32.8
CS11-1_24	6.5	0.7	1495.1	9.9
CS11-1_25	5.6	0.5	1081.7	19.5
CS11-1_26	6.7	0.8	1035.7	15.9
CS11-1_27	6.1	0.5	993.9	10.3
CS11-1_28	6.6	0.9	1241.3	6.7
CS11-1_29	6.5	0.9	991.1	31.4
CS11-1_30	6.4	0.7	955.1	15.6
CS11-1_31	7.0	0.6	1018.8	47.3
CS11-1_32	7.1	0.7	1053.1	7.6
CS11-1_33	5.7	0.6	1500.7	9.7
CS11-1_34	5.5	0.5	1262.9	5.9
CS11-1_37	7.0	0.6	1502.9	12.8
CS11-1_38	6.4	0.7	1502.0	7.7
CS11-1_39	6.3	0.6	991.5	10.1
CS11-1_42	7.6	0.8	970.9	21.2
CS11-1_44	5.2	0.4	955.5	15.0
CS11-1_46	6.4	0.7	985.6	15.6
CS11-1_47	6.8	0.8	1098.3	34.5
CS11-1_48	7.6	0.9	1485.5	6.7
CS11-1_51	6.8	0.5	918.7	28.8
CS11-1_52	6.8	0.8	1499.5	7.1
CS11-1_54	5.9	0.6	1052.9	19.3
CS11-1_55	7.2	0.7	1484.9	9.8
CS11-1_56	6.5	0.8	1078.3	7.1
CS11-1_57	8.5	1.1	987.7	39.9
CS11-1_58	7.0	0.7	1070.9	11.3
CS11-1_60	6.6	0.9	1068.8	9.3
CS11-1_62	6.5	0.5	1220.6	22.4
CS11-1_63	6.2	0.5	1063.3	10.0
CS11-1_71	8.4	1.1	975.9	77.0
CS11-1_76	7.4	0.7	951.2	52.3
CS11-3_1	5.9	0.4	985.0	18.5
CS11-3_3	6.1	0.3	1498.3	10.1
CS11-3_4	6.2	0.4	1245.0	11.0
CS11-3_5	6.2	0.5	982.6	26.3
CS11-3_6	5.8	0.5	954.8	20.5
CS11-3_7	6.1	0.6	1077.2	12.0
CS11-3_8	6.0	0.4	1505.8	7.5
CS11-3_9	5.8	0.5	1120.6	11.0
CS11-3_10	6.0	0.5	858.1	37.2
CS11-3_11	6.2	0.4	1105.4	16.2
CS11-3_16	5.7	0.5	1090.7	10.3
CS11-3_17	5.3	0.4	1639.3	12.0
CS11-3_18	5.3	0.6	959.7	19.6

Siam1_94	5.2	0.3	2137.9	8.3
Siam1_96	5.3	0.3	2149.7	5.7
Siam1_97	5.1	0.3	2663.1	3.5
Siam1_95	5.7	0.3	1903.7	14.9
Siam1_98	4.6	0.3	2776.3	2.3
Siam1_100	5.0	0.3	2144.2	7.5
Siam1_101	4.7	0.3	2916.7	3.1
Siam1_102	6.0	0.3	1873.5	3.4
Siam1_111	5.6	0.3	1881.8	4.4
Siam1_112	4.7	0.3	2715.9	5.9
Siam1_114	5.9	0.3	2742.0	6.8
Siam1_116	5.7	0.3	2720.7	5.9
CS11-18_1	6.8	0.8	1096.0	14.6
CS11-18_2	6.7	0.5	1762.2	8.6
CS11-18_3	5.6	0.5	1803.3	11.6
CS11-18_4	5.0	0.5	2683.7	5.0
CS11-18_5	5.7	0.5	1792.2	8.9
CS11-18_7	4.7	0.4	1839.9	7.6
CS11-18_8	10.3	1.0	1927.7	7.8
CS11-18_9	5.2	0.5	1810.6	8.5
CS11-18_10	6.3	0.8	1828.5	6.1
CS11-18_11	6.7	0.5	1802.5	7.9
CS11-18_12	7.4	0.7	1806.6	6.4
CS11-18_13	7.0	0.5	1808.5	5.8
CS11-18_14	4.1	0.3	2719.6	5.8
CS11-18_15	4.2	0.4	2686.0	5.1
CS11-18_16	4.8	0.4	1826.2	6.0
CS11-18_17	4.7	0.4	1791.8	8.3
CS11-18_18	5.2	0.6	1821.8	6.0
CS11-18_19	5.5	0.5	1819.8	13.4
CS11-18_20	6.1	0.6	1811.2	6.5
CS11-18_21	4.9	0.5	1822.2	5.8
CS11-18_22	6.4	0.7	1778.7	8.8
CS11-18_23	3.9	0.4	2699.9	5.8
CS11-18_24	5.6	0.5	1819.8	5.7
CS11-18_26	5.4	0.4	1805.3	5.9
CS11-18_27	2.4	0.2	2624.0	5.1
CS11-18_29	4.8	0.4	1794.3	11.9
CS11-18_30	5.1	0.5	1794.3	10.5
CS11-18_32	12.4	1.1	1811.8	7.2
CS11-18_33	7.3	0.7	1722.8	11.1
CS11-18_35	5.7	0.7	1773.6	6.0
CS11-18_36	6.3	0.5	2645.4	5.2
CS11-18_37	2.9	0.3	1754.6	4.9
CS11-18_38	8.4	0.9	2707.3	5.4
CS11-18_39	5.2	0.4	2693.2	6.2
CS11-18_40	4.3	0.4	1795.1	5.9
CS11-18_41	3.1	0.2	2437.0	6.1
CS11-18_42	4.0	0.4	1783.6	5.6
CS11-18_43	4.3	0.4	1784.7	6.3
CS11-18_44	2.7	0.2	2633.8	7.4
CS11-18_46	5.2	0.4	1808.4	5.0
CS11-18_47	5.0	0.5	2629.5	6.7
CS11-18_48	4.7	0.6	2672.7	5.0
CS11-18_49	5.0	0.5	2600.7	5.2
CS11-18_50	4.8	0.5	2576.3	5.0
CS11-18_53	5.3	0.5	2746.4	5.9
CS11-19_1	5.7	0.4	1611.0	6.7
CS11-19_3	8.9	0.6	1649.9	11.1
CS11-19_5	3.0	0.2	1663.4	18.2
CS11-19_6	3.8	0.3	1353.8	12.3
CS11-19_9	8.6	0.8	1808.8	8.4

CS11-5_43	6.3	0.2	1732.4	9.2
CS11-5_45	9.1	0.2	1825.3	9.1
CS11-5_46	6.6	0.2	1552.4	14.4
CS11-5_47	6.6	0.3	1989.5	8.9
CS11-5_50	8.7	0.2	1801.4	3.7
CS11-5_52	6.3	0.2	2716.4	2.3
CS11-20_54	8.9	0.7	1793.1	17.0
CS11-20_69	3.7	0.3	1771.8	16.1
CS11-20_65	4.1	0.3	1743.0	15.3
CS11-20_32	7.7	0.6	1602.7	17.1
CS11-20_14	5.2	0.3	1845.1	15.9
CS11-20_26	8.2	0.6	1634.2	15.0
CS11-20_35	7.4	0.6	1980.5	33.3
CS11-20_67	5.9	0.5	1180.1	18.5
CS11-20_45	6.2	0.5	1781.3	16.6
CS11-20_58	4.8	0.4	1824.6	14.5
CS11-20_24	3.7	0.3	1280.4	18.9
CS11-20_5	6.8	0.5	1321.9	20.3
CS11-20_2	6.2	0.4	1302.3	21.8
CS11-20_20	4.9	0.4	1373.2	19.1
CS11-20_53	6.8	0.5	1200.1	20.7
CS11-20_38	5.2	0.4	1098.5	18.3
CS11-20_6	5.0	0.4	1088.9	23.2
CS11-20_21	2.8	0.2	2540.8	15.3
CS11-20_46	5.5	0.4	1374.1	27.4
CS11-20_48	3.7	0.3	1786.0	12.8
CS11-20_59	5.1	0.4	1393.5	20.7
CS11-20_10	4.3	0.3	1185.9	32.4
CS11-20_19	6.5	0.4	1557.6	19.6
CS11-20_11	5.5	0.4	1757.2	17.2
CS11-20_22	8.6	0.6	1658.6	19.3
CS11-20_30	7.2	0.5	1140.8	19.4
CS11-20_40	5.9	0.4	1498.3	16.8
CS11-20_36	4.7	0.4	1403.2	21.7
CS11-20_1	6.5	0.4	1340.4	22.0
CS11-20_50	2.3	0.2	1182.2	18.6
CS11-20_44	4.9	0.4	1681.1	17.5
CS11-20_27	4.8	0.4	1254.5	21.3
CS11-20_34	4.7	0.3	1099.5	27.4
CS11-20_17	4.8	0.3	1790.3	25.1
CS11-20_33	7.2	0.6	1790.4	17.0
CS11-20_8	6.5	0.4	1683.4	18.7
CS11-20_3	6.5	0.4	1134.3	26.4
CS11-20_7	6.9	0.5	1664.5	20.6
CS11-20_57	4.1	0.3	1527.0	16.5
CS11-20_47	4.0	0.3	1118.3	26.3
CS11-20_4	6.0	0.5	1975.3	17.6
CS11-20_13	4.1	0.3	2715.2	15.9
CS11-20_28	4.9	0.3	2724.5	23.0
CS11-20_39	8.5	0.6	1655.9	17.9
CS11-20_31	5.0	0.3	2392.7	18.1
CS11-20_55	2.3	0.2	1505.2	14.4
CS11-20_15	5.8	0.4	1333.3	23.8
CS11-20_43	6.4	0.6	1747.1	17.8
CS11-20_52	3.4	0.3	1666.2	17.3
CS11-20_68	4.7	0.3	1758.0	16.5
CS11-20_37	4.2	0.3	1793.5	16.6
CS11-20_51	4.6	0.4	1436.5	17.1
CS11-20_49	5.8	0.4	1614.5	29.7
CS11-20_16	5.6	0.4	1671.9	19.3
CS11-20_60	4.9	0.4	1803.2	17.7
CS11-20_41	5.8	0.5	1695.5	12.2
CS11-20_66	4.0	0.3	1755.9	13.4
CS11-20_25	6.1	0.4	1136.1	57.5

CS11-3_19	5.2	0.4	1660.9	9.5
CS11-3_20	5.8	0.5	1238.5	9.1
CS11-3_21	6.3	0.4	957.6	23.0
CS11-3_22	5.1	0.4	987.5	37.1
CS11-3_24	5.3	0.4	1669.2	6.0
CS11-3_25	5.5	0.3	1659.5	8.5
CS11-3_26	6.5	0.5	995.8	13.6
CS11-3_27	5.7	0.4	1117.9	11.3
CS11-3_29	5.1	0.3	1670.9	7.5
CS11-3_30	5.3	0.3	1525.6	7.3
CS11-3_31	5.6	0.4	1657.0	6.2
CS11-3_32	6.7	0.5	983.6	21.6
CS11-3_33	5.7	0.4	1108.8	11.8
CS11-3_34	5.8	0.5	977.5	10.4
CS11-3_35	6.0	0.4	1649.6	18.3
CS11-3_36	4.9	0.4	1145.0	11.8
CS11-3_37	4.8	0.3	1653.0	5.6
CS11-3_39	6.4	0.5	1512.0	6.1
CS11-3_40	6.3	0.4	935.8	24.5
CS11-3_41	6.9	0.4	946.2	15.7
CS11-3_42	5.5	0.3	1010.4	12.7
CS11-3_43	6.4	0.5	918.0	35.8
CS11-3_44	6.1	0.5	1120.8	12.4
CS11-3_45	5.6	0.6	1067.4	13.6
CS11-3_46	5.8	0.6	1073.2	18.1
CS11-3_47	5.5	0.6	1094.7	26.8
CS11-3_48	5.1	0.5	1045.9	41.1
CS11-3_49	5.5	0.6	1119.0	6.7
CS11-3_51	4.7	0.5	1114.3	9.5
CS11-3_52	4.4	0.5	1645.0	10.3
CS11-3_53	4.6	0.5	1656.1	15.6
CS11-3_54	5.1	0.5	1491.7	22.8
CS11-3_55	4.6	0.5	1088.4	9.2
CS11-3_56	5.0	0.5	1257.6	15.0
CS11-3_57	5.3	0.5	1071.3	20.9
CS11-3_58	5.4	0.6	1107.1	9.3
CS11-3_72	4.6	0.5	929.4	29.8
CS11-9_1	5.8	0.3	1060.8	68.7
CS11-9_2	6.4	0.3	1050.1	28.6
CS11-9_3	5.8	0.2	1099.6	9.5
CS11-9_4	7.3	0.2	1043.0	22.8
CS11-9_6	6.6	0.2	1062.8	59.8
CS11-9_7	7.1	0.3	1074.0	139.9
CS11-9_8	7.1	0.2	1053.0	20.0
CS11-9_9	6.4	0.2	1180.4	71.2
CS11-9_10	6.4	0.2	1051.9	44.4
CS11-9_11	7.1	0.2	1091.6	104.3
CS11-9_12	7.1	0.2	1042.5	65.0
CS11-9_13	6.5	0.2	1044.9	26.1
CS11-9_15	6.4	0.3	1066.9	51.8
CS11-9_16	6.1	0.3	1079.2	19.6
CS11-9_17	7.2	0.2	1072.2	69.9
CS11-9_18	6.9	0.2	1061.0	47.4
CS11-9_19	6.6	0.2	1092.9	45.0
CS11-9_20	5.2	0.2	1127.7	13.5
CS11-9_21	7.1	0.2	1050.4	53.2
CS11-9_22	7.2	0.2	1066.3	45.1
CS11-9_23	6.1	0.3	1069.9	80.6
CS11-9_24	7.0	0.2	1070.8	18.4
CS11-9_25	6.5	0.3	1052.4	53.3
CS11-9_27	7.0	0.2	1066.6	29.8
CS11-9_28	6.6	0.2	1027.0	121.2
CS11-9_29	5.9	0.2	1068.2	25.8

CS11-19_10	4.9	0.4	1352.5	8.8
CS11-19_12	3.4	0.3	1711.9	12.1
CS11-19_13	4.6	0.4	1456.7	11.4
CS11-19_14	5.5	0.4	1676.1	11.1
CS11-19_16	8.0	0.6	1659.4	12.7
CS11-19_18	9.4	0.7	1198.1	11.7
CS11-19_19	4.9	0.6	1387.2	7.8
CS11-19_20	4.5	0.3	1661.1	11.7
CS11-19_23	5.8	0.5	1441.6	9.7
CS11-19_24	5.6	0.4	1859.8	7.0
CS11-19_25	4.9	0.4	1923.5	13.5
CS11-19_26	4.5	0.3	1672.3	6.1
CS11-19_27	4.4	0.4	1680.5	9.3
CS11-19_28	6.3	0.6	1776.1	16.6
CS11-19_30	5.9	0.4	1622.9	13.5
CS11-19_31	5.6	0.4	1754.7	8.2
CS11-19_32	4.4	0.3	1677.7	6.2
CS11-19_33	6.0	0.5	1489.8	12.3
CS11-19_35	6.2	0.5	1651.1	6.3
CS11-19_38	8.8	0.7	1655.9	6.8
CS11-19_39	6.2	0.5	1332.9	15.0
CS11-19_40	4.7	0.3	1696.7	16.9
CS11-19_41	4.3	0.3	1770.9	7.9
CS11-19_42	9.8	0.9	1791.7	16.8
CS11-19_43	8.2	0.7	1648.8	13.3
CS11-19_44	4.9	0.5	1702.2	7.8
CS11-19_45	9.0	0.6	1653.8	9.0
CS11-19_46	7.1	0.6	1423.9	14.8
CS11-19_47	6.3	0.5	1748.4	11.4
CS11-19_48	5.3	0.4	1682.6	6.7
CS11-19_49	8.8	0.6	1660.9	8.2
CS11-19_50	4.7	0.4	2003.7	11.3
CS11-19_51	7.9	0.6	2024.9	9.9
CS11-19_52	7.1	0.6	2006.4	5.1
CS11-19_54	5.1	0.4	1667.5	7.7
CS11-19_55	5.1	0.4	1830.3	6.5
CS11-19_57	6.8	0.7	1542.5	8.5
CS11-19_58	4.2	0.4	1675.8	7.0
CS11-19_60	6.6	0.5	1444.6	8.2

CS11-20_64	6.8	0.5	1643.2	12.3
CS11-20_18	4.6	0.3	1759.1	18.4
CS11-20_63	6.3	0.5	1357.2	19.2
CS11-20_12	5.7	0.3	1711.6	16.9
CS11-20_70	4.3	0.4	2818.8	14.9
CS11-20_42	6.1	0.5	1723.8	16.1
CS11-20_56	4.2	0.5	1610.0	12.2
CS11-20_29	5.6	0.4	1035.7	34.0
CS11-20_62	5.3	0.4	1319.1	16.9
CS11-20_9	5.9	0.4	1620.2	20.0

CS11-13_1	6.0	0.2	1592.3	9.5
CS11-13_2	6.9	0.2	1049.6	8.8
CS11-13_6	4.8	0.2	1048.1	12.5
CS11-13_7	6.6	0.2	1062.8	81.0
CS11-13_9	6.5	0.2	1074.0	14.4
CS11-13_10	8.1	0.2	1164.4	16.5
CS11-13_11	5.8	0.2	1597.8	15.1
CS11-13_12	6.7	0.2	1513.8	21.0
CS11-13_14	8.1	0.2	1651.0	5.0
CS11-13_15	6.7	0.2	1009.2	70.2
CS11-13_16	9.5	0.2	1060.1	19.2
CS11-13_17	7.1	0.2	1675.3	4.4
CS11-13_19	5.3	0.2	1655.4	3.5
CS11-13_21	7.3	0.2	1314.1	63.6
CS11-13_26	6.1	0.2	1001.8	12.2
CS11-13_28	4.5	0.2	1652.5	4.5
CS11-13_29	7.5	0.2	1454.2	8.9
CS11-13_30	5.8	0.2	1103.3	37.2
CS11-13_31	7.4	0.2	1345.4	10.0
CS11-13_32	5.7	0.2	1737.1	5.3
CS11-13_33	5.4	0.2	1404.0	30.5
CS11-13_35	7.0	0.2	1102.2	13.8
CS11-13_36	6.8	0.2	1204.9	37.7
CS11-13_37	5.5	0.2	973.5	85.5
CS11-13_38	7.1	0.2	1658.0	18.9
CS11-13_39	9.0	0.2	1620.2	9.8
CS11-13_41	6.5	0.2	1248.7	8.9
CS11-13_42	8.2	0.2	975.7	24.6
CS11-13_43	5.9	0.2	1334.7	33.1
CS11-13_44	8.8	0.2	1480.9	7.5
CS11-13_45	6.1	0.2	1649.2	6.0
CS11-13_46	5.8	0.2	1652.6	6.3
CS11-13_47	6.2	0.2	1622.4	15.1
CS11-13_49	7.1	0.2	1316.0	13.8
CS11-13_51	5.9	0.3	1644.6	34.8
CS11-13_52	6.0	0.2	1100.5	104.4
CS11-13_54	4.5	0.2	1304.3	24.9
CS11-13_55	6.5	0.2	1047.8	20.2
CS11-13_56	5.1	0.2	1536.1	17.8
CS11-13_57	8.2	0.2	1114.4	13.6
CS11-13_59	6.7	0.2	1688.4	17.0
CS11-13_62	5.8	0.2	1659.7	10.1
CS11-13_63	5.3	0.2	1302.3	85.8
CS11-13_67	7.8	0.2	1657.0	4.4
CS11-13_69	6.4	0.2	1047.7	23.0
CS11-13_71	9.1	0.2	1074.0	13.5
CS11-13_72	5.8	0.2	1764.5	7.4
CS11-13_73	6.5	0.2	2667.2	2.5
CS11-13_74	8.0	0.3	1076.5	15.1

CS11-9_30	6.8	0.2	1103.2	123.0
CS11-9_31	7.0	0.2	1056.6	53.2
CS11-9_32	6.3	0.2	1066.6	52.5
CS11-9_34	6.7	0.2	1094.8	36.1
CS11-9_35	6.7	0.2	1043.6	69.9
CS11-9_36	6.4	0.2	1103.8	77.1
CS11-9_37	7.5	0.2	1078.7	44.6
CS11-9_38	7.1	0.2	1079.5	40.9
CS11-9_39	6.3	0.2	1097.8	45.6
CS11-9_40	7.9	0.2	1066.7	18.2
CS11-9_41	6.2	0.3	1073.4	19.2
CS11-9_42	6.7	0.3	1099.2	114.3
CS11-9_43	6.6	0.2	1073.8	133.7
CS11-9_44	5.8	0.2	1057.6	28.2
CS11-9_45	6.3	0.2	1060.7	12.3
CS11-9_46	6.7	0.2	1024.8	81.6
CS11-9_47	7.0	0.2	1100.1	16.9
CS11-9_48	8.6	0.2	1062.4	111.9
CS11-9_49	5.9	0.3	1110.1	101.2
CS11-9_50	9.0	0.3	1093.2	24.3
CS11-9_51	7.3	0.2	1081.0	19.4
CS11-9_52	6.5	0.3	1157.8	76.1
CS11-9_53	5.7	0.3	1192.3	63.6
CS11-9_56	6.8	0.2	1083.4	326.8
CS11-9_58	4.7	0.2	1436.8	14.8
CS11-9_63	5.5	0.2	1229.5	17.1
CS11-9_69	5.3	0.2	1173.4	47.6
CS11-9_75	6.6	0.2	1501.0	11.6
CS11-9_80	6.0	0.2	1214.0	91.2
CS11-9_85	8.1	0.3	1094.8	82.2
CS11-9_100	5.5	0.2	1110.2	50.9
CS11-9_105	11.2	0.3	1025.5	31.5
CS11-9_106	8.3	0.2	1007.4	189.4
CS11-9_110	7.9	0.3	1048.8	85.8
CS11-9_112	5.5	0.2	1172.0	11.0

CS11-13_75	4.9	0.2	1661.1	6.9
CS11-13_77	5.7	0.2	1349.9	17.4
CS11-13_78	5.1	0.2	1617.6	19.8
CS11-13_79	6.8	0.2	1058.0	37.2
CS11-13_80	8.0	0.2	1432.5	10.7
CS11-13_82	5.8	0.2	1664.2	9.8
CS11-13_83	5.0	0.2	1342.0	16.7
CS11-13_84	5.5	0.2	1024.0	9.6
CS11-13_85	6.2	0.2	1331.8	32.4